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EDGAR A. DOLL. Idiot, Imbecile, and Moron.

C. M. DISERENS and T. W. WOOD. The Prevalence of Belief in Fortune Telling Among College Students.

WILLARD C. OLSON. The Waiver of Signature in Personal Reports.

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JAMES P. PORTER, Ohio University
Athens, Ohio

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IDIOT, IMBECILE, AND MORON*

EDGAR A. DOLL
The Training School at Vineland, New Jersey

THE wide-spread use of intelligence tests has produced a marked curtailment of the technique of mental diagnosis. Quite the opposite effect might have been expected, since the results from intelligence tests were originally designed to elaborate the other details of the clinical syllabus. So effective have intelligence tests become that many clinical psychologists are strangers to the intimate details of the traditional clinical syllabus. Time was when the clinical psychologist was expected to evaluate his observations in relation to hereditary background, social and cultural milieu, developmental history, medical history, school history, occupational or industrial history, and all those influences, biological, environmental, and personal, which might shed light on the subject's present status. Similarly, the examination for present status in earlier days included consideration of the subject's social adjustment, personal characteristics, physical development, motor skills, educational attainment, special abilities and disabilities, habits, interests, attitudes, affective reactions, and other wide-spread psychological considerations. In this complete appraisal the measurement of intelligence was only one detail, although usually the most important.

In those days, even the intellectual aspect of individuality was conceived as something more than a score on a standard intelligence test, involving as it did such items as readiness and clarity of comprehension, persistence of concentration, autocritical judgment, facility of reasoning, range of vocabulary, span and type of memory, in short, the psychological as opposed to the psychometric side of clinical psychology.

This clinical psychology, established by Witmer, encouraged by Huey, championed by Wallin, promoted by Goddard,

* Read at the annual meeting of the Association of Consulting Psychologists, Vineland, New Jersey, May 9, 1936.

assisted by Whipple, was dependent for its mental measurement techniques on the work of Cattell and his associates. This field of mental tests was ably summarized in Whipple's manual, with which few clinicians of today seem to be familiar. In those early days the clinical psychologist was presumed to be familiar with differential symptom-complexes, or what our medical colleagues call clinical syndromes. In the absence of rule-of-thumb methods and statistically established differentiating norms, much resourcefulness was required on the part of the clinician to establish an expert or artistic type of diagnosis. Classification dealt with an individual's status in respect to some particular characteristic such as bright or dull, weak or strong, ignorant or learned, while diagnosis was the synthetic appraisal of all detailed characteristics in some unified whole or clinical category, for purposes of prognosis, disposition, and treatment.

Has the need for such clinical psychology passed, or has our preoccupation with objective, standardized procedures led to over-simplification in diagnosis? We cannot, even if we would, return to the days which preceded the Binet Scale. We are too dissatisfied with vague, random, individual, and unverifiable examination methods. Unsystematic methods of history taking, and the exercise of personal judgment in the interpretation of heterogeneous data are scientifically unsatisfactory. On the other hand, there are few standard schedules for history taking, and the criteria for interpreting histories are unsatisfactory. Our enthusiasm for statistical methods of combining and interpreting miscellaneous data is well directed. We do gravely need more systematic, more objective, more standardized, more diagnostic methods if the practise of clinical psychology is ever to be passed from a handful of experts to a host of technicians.

Let us examine this situation as it affects the field of mental deficiency. The diagnosis of feeble-mindedness is one of the important problems of applied psychology, and the consulting psychologist here plays a rôle of special importance. Mental deficiency is a developmental defect which involves nearly

every phase of those individual differences with which the psychologist is primarily concerned. Our characteristic preference for objective and quantitative methods offers many advantages over the impressionistic approaches of other professional groups. The diagnosis of mental deficiency has grave implications for social disposition and educational treatment. Consequently, the correctness of diagnosis is important because of the implications for custody, care, treatment, training, and social control. We cannot, therefore, view this problem lightly in terms of mere academic interest. Social, personal, and family interests require that we give this work our most earnest consideration as a field of public service as well as scientific interest.

Historically, legally, and by general connotation, mental deficiency means feeble-mindedness. A threefold criterion is necessary for diagnosis, namely, social incompetence, due to low intelligence, which has been developmentally arrested. To these essential ear-marks of mental deficiency may be added other helpful, but not essential, descriptive traits, such as developmental physical anomalies, educational retardation, juvenile personality, low degree of initiative, limited judgment, and the like. These are helpful in diagnosis and serve to confirm a suspicion of mental deficiency in young borderline and adult high-grade subjects. Sometimes these accompanying traits may even be used in lieu of other criteria, but always in fact or by implication it is necessary to demonstrate first, social incompetence, then, intellectual incompetence, then, developmental arrest.

But how shall we define these criteria, how shall we measure them, and what differentiating standards should we employ? Social competence has never been adequately defined, never objectively measured, and never differentially standardized. Only vague, incomplete, or impressionistic descriptions are available, and these do not agree among themselves in emphasizing the same or even the essential details. This lack is particularly evident in the case of children, so evident in fact, that educational disability has been widely em-

ployed as a substitute for social disability. We are further troubled by the questions of time, and place, and circumstance. The station in life to which one is born, the degree of civilization, the racial or cultural level, the exigencies and conventions of the day and the environment are all so difficult to allow for that no universal standard of social competence seems possible of formulation.

In establishing the intellectual criterion for mental deficiency we are in a much better case. Here the Binet-Simon Scale serves so well as to overshadow all other criteria, and even threatens to supplant them. Yet the intellectual criterion cannot be suitably established until the social criterion has been satisfied. In the lower grades of mental deficiency this social criterion may be assumed, because the social competence of the low-grade feeble-minded is practically self-evident. But in the case of growing children, and in the case of high-grade feeble-minded adults, the intellectual standard must remain uncertain until it can be validated against some social standard which shall be reasonably adequate. This is the reason why there is so much controversy as to the upper Binet IQ limit for the young feeble-minded and the upper Binet mental age limit for the adult high-grade feeble-minded.

Most of what we know objectively and quantitatively about the intelligence of the feeble-minded is limited to the use of the Binet Scale. The varying results obtained by group tests as compared with individual tests, by verbal tests as compared with non-verbal, and by paper and pencil tests as compared with performance tests, have not yet received adequate attention. What we know about the differentiating value of Binet mental ages has been applied indiscriminately to other systems of intelligence measurement. Yet it can easily be shown from a study of these different tests that the interpretation of test data requires intimate knowledge of the different qualities of intelligence and the statistical aspects of test standardization from the point of view of differentiating norms. Thus, the standard of mental deficiency more or less agreed upon for the Binet Scale does not apply without modification for most other

intelligence tests. This situation is still further complicated by the range within which the tests employed are valid and especially by the uncertain upper developmental limit measured by such tests. Even for the Binet we have not yet agreed upon the average-normal adult level, nor have we certainly determined the upper mental age and IQ limits for feeble-mindedness.

In the case of children the attempt to use the IQ for purposes of diagnosis, and especially for classification by degree of mental deficiency, is complicated by the uncertainties of our knowledge regarding the course of mental growth for different types and degrees of feeble-mindedness. If the IQ were constant, this would be a comparatively simple matter; but since the IQ is not constant for more than a limited number of the feeble-minded, but declines at unequal rates with increasing maturity for the different types and degrees of feeble-mindedness, the use of the IQ during the developmental period is subject to very definite limitations.

Considering the third criterion, namely, arrested development, we note at once that this arrest may be due either to limited biological potential or to post-conceptional causes of many sorts. This arrest may be sudden or gradual. Here again we are definitely limited by the lack of suitable schedules of development which can be applied throughout the period of maturation and which can be interpreted differentially in quantitative terms. In spite of the wealth of material in the field of genetic psychology, it is surprisingly difficult to obtain a satisfactory developmental history beyond the period of infancy or early childhood. To be sure, if the Binet Scale has been applied during the successive years of development, these results could be used for that purpose as far as intelligence is concerned. But we should still be lacking a record of *social* development during childhood and youth. Within some limits, the Binet Scale can be used retrospectively for taking histories by asking the informant at what age the child first knew his name, at what age he could count 4 objects, at what age he could say the days of the week, or perhaps at what age

he could first draw a circle, copy a square or a diamond, or name the usual coins.

The diagnosis of mental deficiency is commonly followed by a classification according to degree and type. In common practice the classification by degree is simple enough in terms of the standard mental age classification. For this purpose the lowest grade of mental deficiency, idiocy, is considered as including those feeble-minded whose Binet mental ages are below 3 years; the intermediate grade, imbecility, includes those with Binet mental ages between 3 and 7 years; while the highest grade, moronity, includes those with Binet mental ages from 8 to some uncertain upper limit, usually taken from 9 to 14 years. An IQ classification is sometimes employed considering as idiots those of IQ's below 25, as imbeciles those with IQ's between 25 and 50, and as morons those with IQ's between 50 and 75. The doubtful value of this IQ classification has already been pointed out because of the tendency of the IQ to decrease as age increases among the feeble-minded.

The central thesis of this paper is that idiocy, imbecility, and moronity are not mere successive stages of a mental-age continuum, but are different categories of a common condition, differing qualitatively as well as quantitatively from each other. To those who live with the feeble-minded, an idiot is not just a person with a mental age below 3 years. On the contrary, the idiot is a person who cannot protect himself from ordinary dangers, who cannot provide for his ordinary wants, who has practically no speech, and who needs throughout his entire life that kind of personal assistance which is commonly given to chlidren under 3 years of age. To be sure, this degree of social incompetence is *correlated* with a similar degree of intelligence, but idiots differ much more among themselves in their Binet mental ages than they do in social dependence. The social dependence is the primary consideration, and the low intelligence is the explanation of it. As among all of the feeble-minded, this social dependence and this low intelligence of the idiot are due to lack of development rather than to deterioration. Those who live with idiots have little difficulty

in diagnosing them as such without need of mental tests except as the measured degree of intelligence confirms the diagnosis. If a person is an idiot, he is feeble-minded.

Likewise the imbecile, while able to protect himself from simple dangers, provide for his ordinary wants, feed and dress himself, and exercise a fair degree of speech, is incapable of performing any but the simplest occupational tasks, of acquiring any appreciable degree of literacy, or of getting along socially without continued supervision. These are the essential characteristics of the imbecile. To them must be added a history of development which shows that he has never exceeded these same abilities. To be sure, his mental age, physical characteristics, personality, and other traits will add confirming details, but again those familiar with the feeble-minded have little difficulty in recognizing him on the basis of his social dependency. If a person is an imbecile, he is feeble-minded.

The moron, on the other hand, while capable of performing all the social achievements of the idiot and the imbecile, goes beyond these by acquiring a low degree of literacy, by learning occupational pursuits at the common labor, factory-operative, or apprentice level of employment, and by getting along socially with only occasional supervision. The moron, however, is not capable of getting along "on his own" socially with more than marginal success, or of providing for others, or of exercising good judgment in social adaptation. The moron is much more difficult to recognize than the idiot or the imbecile, because in his other characteristics he closely resembles the dull-normal, and his intelligence level reaches well into the lower limits of normality. In fact, the Binet mental age criterion of feeble-mindedness breaks down at the upper moron level because the high-grade moron's Binet age may reach as high as the quartile and in some instances even up to the average of the normal distribution. It is this social incompetence of the moron that distinguishes him from the dull-normal more specifically than his other qualities. If a person is a moron, he is feeble-minded.

The dull-normal, on the other hand, exceeds the moron in

social competence, but resembles him in intellectual level and educational attainment. Many dull-normals, especially those who are verbally handicapped, do not succeed in school work beyond the fifth or sixth grade, and many of them have Binet mental ages as low as 8 or 10 years. The dull-normal, however low his intelligence, and however low his cultural or economic level, is socially competent in that he can manage his own affairs without need of supervision. Dull-normals constitute a fairly large number of the population and the programs of custody, treatment, training, care, and disposition developed for the feeble-minded, do not properly apply to them. If a person is a dull-normal, he is *not* feeble-minded.

Idiots, imbeciles, and morons are feeble-minded, and only they. Their condition is reflected in their social inadequacy which results from limited development of the intelligence. But persons of low intelligence who are socially adequate cannot be considered feeble-minded. The Binet mental age concept of intelligence leaves an overlapping between the high-grade feeble-minded and the low-grade normal which seriously weakens the criterion of arrested intelligence as part of the diagnosis. If morons "test" as high as Binet mental age 14 and dull-normals as low as Binet mental age 7, it is obvious we cannot use Binet mental age alone as a differentiating standard. Other measures or concepts of intelligence must be employed here which afford a high degree of separation for these two groups. That such other tests and such other concepts are not widely used is a serious reflection on our clinical and our psychological resourcefulness.

If these assumptions are sound, we are still faced with the need for measuring social competence as a developmental function, a need which has never been met since the days of Itard. It was our direct attack on this problem that produced the Vineland Social Maturity Scale. If the successive degrees of social competence are so definitely revealed as we have intimated among idiots, imbeciles, and morons, as successive degrees of mental deficiency, it should be possible to express this competence and its degrees of progressive development in

objective, measurable terms. If this could be done on a basis of genetic maturation, the problem would be greatly simplified and we should have a direct means of evaluating a person's present status, and perhaps his developmental history, and perhaps even his probable future development.

In undertaking this task, we had the very great advantage of the philosophy and method so successfully employed by Binet and Simon. We needed only to list a number of the essential ways in which social competence evolves among normal persons, from infancy to adult life. If performance items could be found with relatively short and steep maturation curves, this would increase the possibility of sharp differentiation of one age group from another. If these social performances could be relatively independent of sex, special training, social class, time and place, personality, intelligence, and so on, and if we could measure the social products of these influences instead of these influences themselves, we might hope for some useful outcome.

When these different degrees of mental deficiency are viewed as separate categories rather than successive degrees of deficiency, we see new possibilities for study, treatment, and disposition. Thus, idiocy is found to be predominantly of the secondary type, that is, of pathological rather than of hereditary origin. Idiocy resembles a state of permanent social and psychological infancy. But if the idiot is compared with adult anthropoids rather than with human infants, wholly unsuspected types of adaptive behavior are uncovered, and the comparative psychology of the idiot becomes better understood. Moreover, the disposition of the idiot from the point of view of custody, treatment, and care is found to be fundamentally different from that which obtains for imbeciles and morons. The idiot is personally helpless and socially useless, a burden rather than a menace, requiring attendance in nearly all his wants and making little significant response to training outside the field of self-help.

The imbecile, in contrast with the idiot, compares rather favorably with young children except that he lacks their ca-

pacity for original adaptation, their natural vivacity, their spontaneous inquisitiveness. The imbecile presents a different order of ability than that found in the idiot, although we must for the moment beg the question as to whether this is a fundamental difference in kind or degree of behavior. Imbecility corresponds to the period of normal childhood between 3 and 8 years of age with all the concrete and animistic implications, as well as the attitudes of personal reference, so common with young children. The treatment and training of imbeciles is substantially similar to those which obtain with the pre-school child, or at least the child below second grade. This means an almost complete absence of educability along scholastic lines and a heavy dependence upon habit training and drill.

Moronity, on the other hand, corresponds to a state of permanent early adolescence or perhaps pre-adolescence, with its typical emotional instability, striving for personal recognition, and almost normal approximation to independent adult activity. The moron, in contrast with the idiot, is principally of the primary or hereditary type, with a low genetic potential, usually reflected in simple developmental deficiency. There is reason to believe that the moron shows some qualitative variation from the normal as well as quantitative deviation, but this is much more subtle than is the case with idiots. The most obvious defects in the moron are his absence of good judgment, his naive personality, his unstable social morale, his weak inhibitions, and his low capacity for sustained effort under stress. The dull-normal shows a small but critical difference in these respects. It must be confessed, however, that these subtle differences have not yet been scientifically substantiated by experimental investigation.

These considerations should influence any program for the social disposition and control of the feeble-minded. The means provided for measuring these abilities directly through such an instrument as the Vineland Social Maturity Scale greatly simplifies and clarifies these problems. Dealing as the scale does with the primary aspect of mental deficiency, namely, social incompetence, and providing as it does for the third

criterion, arrested development (since this scale can be used as a developmental schedule), the diagnostic demonstration of mental deficiency is made easier and the indications for treatment and disposition self-evident. It is obvious that without some such standardized instrument, our information regarding feeble-mindedness and the measures for its control, must continue haphazard rather than scientific. With such an instrument we are now in a position to evaluate other aspects of mental deficiency and to clear up some of the confusion now existing in the other aspects of mental diagnosis.

TRADE NAME HURDLES

H. P. LONGSTAFF
University of Minnesota

THE value of a trade name is wholly psychological. Its value lies in the number of human minds in which it resides, the firmness of its implantation and the associations surrounding it. If it is a hard name to pronounce, the consumer is likely to be embarrassed in making purchases. If it is surrounded by memories of an inferior product its value will be small. Even though it is surrounded by the most pleasant associations but is difficult to remember or is so common and lacking in distinction that it is easily confused with other similar names, it will be of little value. A good trade name successfully clears all of these psychological hurdles.

Several years ago Dr. Daniel Starch pointed out the characteristics a good trade name possesses and outlined methods of ascertaining whether a name possessed these qualities. His list of characteristics is as follows: 1. easy to pronounce; 2. easy to remember and recognize; 3. pleasing and appropriate to the product for which it stands; 4. suggestive of the product but not overdescriptive; 5. unique and distinctive.

That these characteristics are not known or are not considered important by hundreds of manufacturers is obvious to anyone who will take the time to prepare a list of the first fifty trade names he hears over the radio or finds advertised in our newspapers and magazines.

In the class in the Psychology of Advertising at the University of Minnesota this year we conducted a test of the memorability of the ten best of a list of 200 trade names that were devised for a tooth powder in which the most important ingredient was sodium perborate.

The ten names used in this test were as follows: Dentabrite, Dentico, Perboro, S.P.B., LaDento, Boradent, Dentex, Sodent, Galaxy, and Perbor-X. If we compare these names with Starch's list of good qualities, all of them except Galaxy seem

to possess these qualities. They appear easy to pronounce, easy to remember, pleasing and appropriate, suggestive of the product and fairly unique. In order to determine the extent to which these names actually possessed the qualities outlined by Starch we followed the technique outlined by him for testing the value of trade names.

Since this technique is adequately described in his book, "Principles of Advertising," and since the relative value of the names in this study are of no importance here, I shall report only the results of the memory test.

The subjects in this test were 126 juniors and seniors at the University of Minnesota. These students had all maintained an average of "C" or better for their first two years of college work. Thus, intellectually they were a highly selected group.

The test consisted of orally presenting the ten trade names at the rate of one a second. Immediately after the presentation of the last name, the subjects wrote down as many of them as they could remember. The results are presented in Tables I and II.

The results presented in Table I would seem to indicate that as a whole the names were well remembered. But this is only part of the story. Let us examine Table II and what do we find? One hundred thirteen different names or combinations of the original ten names or misspellings of the names were given by these subjects. Some of the incorrect names were given by as many as ten different subjects. The name Perboro

TABLE I

Results of Memory Test

This table indicates the number of students recalling correctly each name. The total number of students was 126.

TRADE NAME	N	TRADE NAME	N
S.P.B.	59	Perboro	38
Galaxy	57	LaDento	33
Dentex	55	Dentico	32
Perbor-X	54	Sodent	27
Dentabrite	50	Boradent	13

TABLE II

Confusion Test Results

This table contains the correct names, the incorrect names, and the number of times the incorrect names were recorded by the students. The italicized names are the correct ones. All the others are incorrect. Those marked with an asterisk (*) are incorrect names that resulted from a combination of two or more of the correct names.

NAME	N
Perboro	
*Perboradent	2
Proboro	9
Perborate	8
Perbor	1
Boro	1
Parbora	1
Proboro	2
Preboro	1
*Preboradent	1
*Porbordent	2
Proborate	1
*Perodent	1
*Probordent	1
*Porboraco	1
Porboro	1
*Perboroco	1
Perborato	1
*Perdent	1
Porbor	1
Probro	1
Perborough	1
*Proborco	1
Total confusions	40
S.P.B.	
S.T.D.	1
P.B.C.	1
R.S.V.P.	1
S.B.O.	1
P.V.T.	1
S.T.B.	1
L.B.S.	1
S.D.B.	1
S.P.P.	1
P.B.S.	5
S.B.X.	1
S.B.	1
S.P.A.	1
S.B.P.	1
S.P.D.	2
S.P.G.	1
S.B.T.	1
P.B.D.	1
S.B.A.	1
P.B.T.	1
S.N.P.	1
Total confusions	26
Perbor-X	
Perboratex	1
Proborax	3
Poborax	1
Poboraex	1
Probex	1
Pobrox	1
Perboxoer	1
Porborax	1
Perborox	1
Perboradex	1
Perboraex	4
Paborox	2
Perboroex	4
Purborox	1
Proborx	1
Total confusions	24
Dentico	
Denteo	1
*Dento	10
Dentaflo	1
Dentyne	1
Dentaglo	2
*Borico	1
Dentine	1
Dento-Co	1
Denta	1
Dentso	1
Dentobo	1
Total confusions	21
Dentabrite	
*Brightex	2
Dentbright	1
Perorbright	1
Clensobrit	1
*Perborobrite	3
Dentite	1
Dentawhite	1
*Boraxrite	1
Dentabas	1
Dentrite	1
Total confusions	13
Ladento	
*Perdento	1
*Laborex	1
*Laboro	1
Eldento	1
Idento	1
Ladent	3
*Ladex	1
*Lanentex	1
Total confusions	10
Sodent	
Sodo	1
*Sanident	1
*Sodident	1
*Sodadent	1
Soldent	1
*Sodabor	1
*Soborate	1
*Soperbo	1
*Sodex	1
*Soboro	1
Total confusions	10
Boradent	
*Burboro	1
Bouroughdent	1
*Boraco	1
*Prodent	1
Borborate	1

*Boborox	1	Galex	2	Denta-X	1
*Barborax	1	*Galatex	1		
*Boradex	1	Gay-Ex Ly	1	Total confusions	2
Total confusions	8	Total confusions	5	*Miscellaneous*	
				Cleanso	1
Galaxy		*Dentex*			
Galax	1	Dental-Tex	1		

was incorrectly recorded 40 times, S.P.B. was incorrectly recorded 26 different times, while Perbor-X was incorrectly recalled 24 times. These results strikingly reveal the uphill struggle involved in the implantation of a trade name in the minds of prospective customers.

Casual examination of the ten names used in this test would lead to the conclusion that they were quite simple and should be easily remembered. But results such as those reported above indicate that such is not the case. This finding becomes even more significant when we stop to consider that the subjects in this test represent at least the upper five per cent of the total population in intellectual ability. Furthermore, they are actively engaged on a full-time basis at learning. If we get such confusion and poor recall from a group of this sort what can be expected from the population as a whole?

These results are in close agreement with those found by nearly every investigator of advertising and selling problems. There is increasing agreement that the best way to solve psychological problems of modern business is by experimentation. One cannot tell by looking at a trade name whether or not it will be a good one. The best way to answer that question is to test it. Adequate tests of trade names can be conducted for a very small fraction of the money that must be spent to put across a poor name. In addition, increased profits will accrue from the early success of a good name as compared with the effort, time, and money necessary to familiarize a poor trade name. In fact, a poor name will always be a handicap no matter how much money is spent in advertising it.

THE WAIVER OF SIGNATURE IN PERSONAL REPORTS

WILLARD C. OLSON
University of Michigan

THE subject's ability and willingness to give truthful or meaningful answers are important issues in the use of all devices calling for a report by an individual concerning his own behavior. In group personality measurement willingness to report must be assumed, if the data obtained are to have some real reference to the individual's characteristics or to the way he looks at his behavior. In the interest of a candid report, the respondent is sometimes instructed that he need not sign his name.

The following experiment was conducted to test the effect of waiver of signature in the case of one of the well-known personal data sheets, and to attempt to determine some of the typical differences in signed and unsigned reports. Two classes of students in sections of the same course in educational psychology were used in the experiment. The students were in the third and fourth college year and were preparing to be teachers. A group mental test had established the comparability of the sections in mental ability, and no known selective or constant factors were at work to negate such results as might be obtained. The Woodworth-Mathews Personal Data Sheet,[1] designed to measure emotional instability, was introduced in each class as an instrument frequently used in studying children. Students were asked to answer the questions with written instructions in one group to sign their names and in the other not to sign them. Those who did not sign were instructed to designate sex by F and M so that the papers could be divided for statistical purposes. After the task was completed, each group was then re-tested with the instructions concerning signatures reversed. By this procedure it was hoped to control variables of unknown signifi-

[1] Published by the C. H. Stoelting Company, Chicago, Illinois.

cance such as the fact that the classes were in charge of different instructors. Because of the limited number of men the analysis of results was confined to sixty women in section one and to forty women in section two.

The blanks were first scored for the number of symptomatic responses and the total scores examined for the effect of the diverse conditions (Table I). Considering only the initial application of the test, the unsigned group gives a higher mean number of symptoms than does the signed. The difference of 5.2 points in the mean has a probable error of 1.04, and the ratio of the difference to its probable error is 5.0. There is thus a high probability that more symptoms will be reported in an initial application of the instrument when names are omitted.

When the detailed distributions are compared, it will be noted that ten students receive scores of 30 or above under the unsigned condition, while no student exceeds a score of 27 under the signed condition. The greater variability of unsigned responses is shown in the values of 9.1 and 6.4 for the standard deviations of the respective distributions.

The re-test data indicate a slight reduction in average score on the second application, irrespective of signature, but the groups tend to maintain their initial status. It may be that the original responses to the questions establish a "set" or memory factor which operates when the procedure is repeated. Some students may have suspected that, through some means unknown to them, their two reports were to be identified and compared. It may be that the contrast in the initial application yields the data of chief significance for the problem.

The percentage of symptomatic responses was determined for each item in the questionnaire for the two groups under both conditions. The differences in response under the changed conditions, the probable errors, and the ratios of the differences to the probable errors were calculated. The data do not warrant presentation in detail. However, a few significant statements concerning the general trend and a comment on the items in which the differences are most outstanding will be of inter-

TABLE I

Contrasts in Signed and Unsigned Reports on the Woodworth-Mathews Personal Data Sheet

SCORE	GROUP I		GROUP II	
	Unsigned First	Signed Second	Signed First	Unsigned Second
38–	4	2		
36–37	1			
34–35		1		
32–33	3	2		
30–31	2	2		
28–29	1	3		1
26–27	2	3	1	
24–25	3	1	1	2
22–23	4	2	3	1
20–21	5	2	3	1
18–19	6	12	2	6
16–17	9	2	8	3
14–15	6	3	7	6
12–13	2	8	3	6
10–11	3	7	2	3
8–9	4	2	3	3
6–7		3	2	4
4–5	4	5	2	1
2–3	1		1	
0–1			2	3
N	60	60	40	40
Md	18.3	18.0	15.4	14.0
M	19.7	17.9	14.5	13.8
$S.D._{dis.}$	9.1	8.8	6.4	6.5
$P.E._{M}$	0.79	0.77	0.68	0.69

est. If we consider the group who first responded anonymously, we find that the frequency of responses under signed conditions decreases for 56 out of the 75 items, while 9 remain unchanged and only 10 items are raised in frequency. Trends do not appear to be significant when the blank is signed first and then filled in a second time without a signature. Frequencies decrease in 29 items, remain unchanged in 26, and increase in 20.

The extent to which responses to specific items differ on the initial application under the two conditions is given in Table II. Responses to the following questions are greater under the unsigned conditions by an amount which is three or more times as great as the probable error of the difference.

	PERCENTAGE DIFFERENCE	$D \div P.E._D$
60. Are you ever bothered by a feeling that things are not real?	32	5.6
43. Do you live in a make-believe life in addition to your real life?	29	4.5
5. Do you ever feel like running away from home?	27	4.1
72. Do you get tired of people easily?	22	4.0
46. Do things ever seem to get misty before your eyes?	22	3.5
53. Do you feel bored a good deal of the time?	18	3.5
54. Do your eyes often pain you?	19	3.5
62. Do you ever feel that someone is trying to do you harm?	12	3.3
64. Does it make you uneasy to sit in a small room with the door shut?	12	3.3
24. Can you sit still without fidgeting?	15	3.2
25. Did you ever have the habit of twitching your head, neck, or shoulders?	13	3.2
51. Do you feel well rested in the morning?	12	3.0

In the following questions responses were identical under the two conditions or the unsigned group actually reported a slightly smaller percentage of each symptom:

1. Do you like to play with other children?
2. Would you rather play by yourself alone?
4. Do other children let you play with them?
56. Have you ever fainted away?
61. Are you ever troubled with the idea that somebody is following you?

TABLE II

Comparison of Percentages of Symptomatic Responses on Initial Application under Unsigned and Signed Conditions*

QUESTION NUMBER	PER CENT UNSIGNED N – 60	PER CENT SIGNED N – 40	DIFFERENCE U – S	D÷P.E.$_D$	QUESTION NUMBER	PER CENT UNSIGNED N – 60	PER CENT SIGNED N – 40	DIFFERENCE U – S	D÷P.E.$_D$
1	3	3	0	–	41	5	3	2	.8
2	13	13	0	–	42	7	5	2	.6
3	0	0	0	–	43	62	33	29	4.5
4	32	28	4	.6	44	10	5	5	1.4
5	72	45	27	4.1	45	5	3	2	.8
6	37	25	12	1.9	46	45	23	22	3.5
7	30	28	2	.3	47	28	20	8	1.4
8	17	13	4	.8	48	30	23	7	1.1
9	15	8	7	1.7	49	7	3	4	1.4
10	18	25	–7	1.2	50	7	5	2	.6
11	27	28	–1	.2	51	17	5	12	3.0
12	23	25	–2	.3	52	30	20	10	1.7
13	30	15	15	2.7	53	23	15	18	3.5
14	20	8	12	2.7	54	32	13	19	3.5
15	45	30	15	2.3	55	20	10	10	2.1
16	10	15	–5	1.1	56	35	35	0	–
17	50	35	15	2.2	57	3	10	–7	2.0
18	65	48	17	2.5	58	28	18	10	1.8
19	32	18	14	2.4	59	10	5	5	1.4
20	28	35	–7	1.1	60	47	15	32	5.6
21	15	5	10	2.6	61	13	13	0	–
22	27	15	12	2.2	62	15	3	12	3.3
23	23	13	10	2.0	63	10	8	2	.5
24	23	8	15	3.2	64	15	3	12	3.3
25	18	5	13	3.2	65	17	8	9	2.1
26	30	15	15	2.7	66	40	43	–3	.4
27	17	10	7	1.6	67	20	30	–10	1.7
28	43	25	18	2.9	68	8	0	0	–
29	65	55	10	1.5	69	10	8	2	.5
30	10	5	5	1.4	70	8	5	3	.9
31	55	38	17	2.5	71	28	33	–5	.8
32	52	40	12	1.8	72	35	13	22	4.0
33	42	35	7	1.1	73	5	13	–8	2.0
34	10	8	2	.6	74	33	20	13	2.2
35	13	8	5	1.2	75	87	93	–6	1.5
36	23	13	10	2.0					
37	27	30	–3	.5					
38	7	13	–6	1.4					
39	33	30	3	.5					
40	35	25	10	1.6					

* The numbers refer to the questions as they appear on the Woodworth-Mathews Personal Data Sheet.

68. Did you ever have a strong desire to set fire to something?
11. Are you afraid during a thunder storm?
12. Do you feel like jumping off when you are on a high place?
37. Do you ever feel a certain pleasure in hurting a person?
66. Do you have a hard time making up your mind about things?
71. Do you make friends easily?

It is difficult to summarize qualitative differences in the two groups of statements contrasted above. In general, it appears that persons are somewhat more ready to report their feelings anonymously. Five out of 12 of the first group of statements actually contain the word "feel" or "feeling," as compared to 2 out of 11 in the second group. Feelings of unreality and boredom which appear in the first part do not have their counterparts in the second. Rather specific physical symptoms—fidgeting, twitching, mist before the eyes, pain in the eyes—appear more frequently in the first group of responses than in the second. An examination of the less contrasting items in Table II tends to strengthen the validity of the qualitative statements made above.

Intra-group comparisons from unsigned to signed and vice versa yield only a few significant changes in item response. The mental set on the initial application seems to affect subsequent responses. In the change from unsigned to signed, the percentage of responses shows small decreases for the following items:

	PERCENTAGE DECREASE	$D \div P.E._D$
5. Do you ever feel like running away from home?	20	3.4
6. Do people find fault with you much?	15	2.7
13. Are you afraid of the dark?	13	2.5
32. Are your feelings often hurt so badly that you cry?	14	2.3
74. Did you ever feel that you were very wicked?	11	2.0

Item 51, "Do you feel well rested in the morning?," with an increase in percentage from 17 to 28 and a ratio of difference to probable error of 2.2 reverses the expectancy created by the initial analysis.

A reference again to Table II indicates that items 5, 6, 13, 32, and 74 as obtained above are also involved in relatively large differences in the same direction in the initial applications. The respondent's feelings are explicit in three out of five of the statements which is disproportionately high when compared to the scale as a whole. Confirmation of the same trend as for the contrasted groups on the initial application is indicated in such small changes as occur from the unsigned to the signed conditions within a group.

A comparison of the responses in the change from the signed to the unsigned condition reveals few outstanding contrasts. Slight increases occur for the following items.

	PERCENTAGE INCREASE	$D \div P.E._D$
60. Are you ever bothered by a feeling that things are not real?	15	2.5
24. Can you sit still without fidgeting?	12	2.4
51. Do you feel well rested in the morning?	10	2.3
65. Do you usually know what you want to do next?	10	2.0

Items 24, 51, 60, and 65 are among those showing the more marked differences reported also in the analysis in Table II. Item 6, "Do people find fault with you much?", of low differential significance in Table II, secures somewhat fewer responses under the unsigned condition with a decrease of 12 per cent and a ratio of difference to probable error of 1.9. Considering the two intra-group comparisons, item 51 increases and item 6 decreases upon the second application irrespective of signature.

On the whole the slight changes under the reversal of direc-

tions within a group tend to confirm and supplement the nature and direction of changes as determined by the contrasts in the initial application.

SUMMARY

The report describes the application of the Woodworth-Mathews Personal Data Sheet to two groups of college women under initial instructions in which one group worked anonymously and one signed their names. The directions were then reversed. Comparisons were made to determine quantitative and qualitative changes traceable to the waiver of signature. The results indicate that on an initial application, a group of students will report significantly more symptoms when they do not need to sign than when they do. The initial experience, however, appears to establish a set or memory factor which prevents large changes on the second application to the same group. An examination of the items responded to in a differential manner on the initial administration of the blanks reveals that under the unsigned condition persons are somewhat readier to report general feelings of unreality, boredom, and desire for escape, as well as specific physical symptoms with a neurotic implication. Data on likes, specific fears, and impulsions are reported with approximately the same frequency under the two conditions. Such intra-group changes as do occur tend to substantiate the contrasts found by the method of initial application. The experiment thus offers additional evidence on the influence of anonymity in personal reports.

RELATED REFERENCES

HENDRICKSON, GORDON. *Attitudes and Interests of Teachers and Prospective Teachers.* Paper presented before Section Q, American Association for the Advancement of Science, Atlantic City, December 27, 1932 (Unpublished).

A group of 54 teachers were given an opportunity to respond twice to the items in the Bernreuter Personality Inventory with a first set of instructions, "This is an opportunity for you to learn something about yourself," and with a second set, "Answer as if you were applying for a teaching position and wished to make as good an impression as possible."

Under the second set of instructions the responses were significantly more stable, extroverted, self-sufficient, and dominant.

KOOS, LEONARD V. *The Questionnaire in Education.* New York: Macmillan Co., 1928. p. 106–109.

In an examination of 143 questionnaires, Koos found the waiver of signature in 14 instances. In general, questionnaires employing this device called for facts which might reflect on the respondent or for opinions or attitudes which, if identified with the respondent, might work to his disadvantage.

MALLER, JULIUS B. *The Effect of Signing One's Name.* School and Society, 31: 882–884, 1930.

A test situation designed to measure cooperation by a comparison of discrepancies occurring in work for a class and work for self shows that the effect of signing one's name was to increase cooperativeness. The group motive was also more persistent over a period of time when names were signed. In a second study, when children were asked to rate members of a class, it was found that they gave significantly more favorable ratings when they were required to sign than when they did not sign. They were more likely to vote themselves favorable ratings in cooperation upon an unsigned ballot than on a signed ballot. Maller concludes that the unsigned situation is more favorable for securing "natural" responses.

HAZARDS ENCOUNTERED WHEN ATTEMPTING TO EQUATE FRATERNITY AND NON-FRATERNITY STUDENTS

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INVESTIGATORS have sometimes compared the scholastic records of fraternity and of non-fraternity students without making any attempt to equate the groups whose records were being compared. When such comparisons are made the need for a control group is too obvious to require extended comment. Reports which ignore or gloss over possible selective factors are hardly worthy of serious consideration. In the present paper no further reference will be made to such inadequate studies.

Some investigators have sought to study the influence of the fraternity environment upon scholarship by studying the records of only those students who have completed a four-year course of study, the fraternity and the non-fraternity students being equated upon the basis of:—(1) intelligence test data, (2) high-school marks, or (3) some combination of these two "criteria of promise" (1) (2). It is the thesis of this paper that even this procedure is of doubtful validity. The following data are offered in support of the foregoing assertion.

TEST-INTELLIGENCE AS A SELECTIVE FACTOR

Table I presents intelligence test data for freshmen fraternity pledges at Ohio University for a five-year interval. This table sets forth percentile ratings on the Ohio State University Psychological Examination (OSU) of all men students whose fraternity and personnel records were reasonably complete. In Table I the combined figures indicate that, as regards test intelligence, fraternity pledges do not differ markedly from freshmen in general. That is to say, Table I suggests that fraternity *pledges* are not chosen at Ohio University upon the basis of their probable scholastic aptitude.

TABLE I

Intelligence Test Ratings of Freshmen Fraternity Pledges at Ohio University for Five Consecutive Years*

YEAR	NO. OF CASES	MEDIAN P.R.	MIDDLE 50 PER CENT RANGE
1928–29	135	48	23–81
1929–30	114	51	25–82
1930–31	155	48	31–73
1931–32	142	57	31–78
1932–33	82	50	24–67
Combined data	682	51	27–78

* Percentile Ratings on the Ohio State University Psychological Examination, mostly Forms 12 to 18 inclusive.

When the fraternity *initiates* are considered the situation differs. Table II presents intelligence test data for (1) two hundred seventy-seven fraternity pledges who were subsequently initiated into full fraternity membership, and (2) two hundred forty-two pledges who for one reason or another failed to be initiated into full fraternity membership. It may be seen from Table II that the median percentile rating of the 277 pledges who were later initiated into full fraternity membership was 61; the median of the 242 who were *not* subsequently initiated into full membership was 49. Sixty-three per cent of the "successful pledges" reached or exceeded the median percentile rating of the "unsuccessful pledges."[1] These data indicate that, although the fraternity *initiates* possessed somewhat greater scholastic aptitude (in so far as this aptitude is measured by the OSU) than did the unsuccessful pledges, the group difference in test intelligence is not as great as might have been anticipated.

TABLE II

Intelligence Test Ratings of Two Groups of Freshmen Fraternity Pledges, namely, (1) Pledges Who Were Subsequently Initiated into Full Fraternity Membership, and (2) Pledges Who Were Not Initiated Into Full Membership

UNIVERSITY SCHOLARSHIP AS A SELECTIVE FACTOR

At Ohio, as at many other universities, the student who is pledged to fraternity or to sorority membership is required

[1] Throughout the present paper the term "successful pledges" is applied to those who were later initiated into full fraternity membership. "Unsuccessful pledges" applies to those who for one reason or another failed to be initiated.

TABLE II

Intelligence Test Ratings of Two Groups of Freshmen Fraternity Pledges, namely, (1) Pledges Who Were Subsequently Initiated into Full Fraternity Membership, and (2) Pledges Who Were Not Initiated Into Full Membership

	(1) FRESHMEN PLEDGED AND INITIATED						(2) FRESHMEN PLEDGED BUT NOT INITIATED					
	Fall of 1928	1929	1930	1931	1932	Total	1928	1929	1930	1931	1932	Total
CLASS INTERVAL												
100*		1			1	2	1					1
95–99	5	5	5	7	4	26		2	1	3	2	8
90–94	7	3	3	2	2	17		2	1	3		6
85–89	3	5	7	4	2	21	3	4	3	4		14
80–84	5	7	2	4		18	4	5	4	5	3	21
75–79	2	3	2	3	2	12		1	2	2	3	8
70–74	3	2	4	5	1	15	2	3	8	4	4	21
65–69	4	2	2	2	4	14		1	3	1	1	6
60–64	2	4	2	4	5	17	1		2	2	2	7
55–59	3	2	8	3		16	2	1	3	3	4	13
50–54	2	3	7	1	4	17		3	4	2	5	14
45–49	4	4	9	1	1	19	1	2	5	1	2	11
40–44	3	2	3	1	1	10		3	3	2	2	10
35–39	4	3	3	5		15	2	1	5	4	4	16
30–34	3	3	2		3	11		3	4	1	4	12
25–29	2	2	1	1	1	7	1	3	3	2	2	11
20–24	4	2	1		1	8	1	3	2		4	10
15–19	1	3	3	1		8	1	2	3	4	4	14
10–14	2	2	4		3	11	2	3	1	2	2	10
5– 9	3	2			3	8	2	5	3	1	4	15
0– 4	1	3	1			5	1	4	3	3	3	14
Total Cases	63	63	69	44	38	277	24	51	63	49	55	242
Median	59	61	55	73	62	61	58	43	50	59	41	49

* The reader will perhaps wonder why percentiles of both 100 and 0 appear in this table. These percentiles were taken from the office records and are doubtless due to the rather careless practice of recording the nearest whole unit when percentiles are computed. Although statistically unsound, the use of these two percentiles (100 and 0) could not have influenced greatly the results and the conclusions that are presented herein.

to earn not less than 12 hours of credit with an average mark of "C" or above during the semester that immediately precedes the date of his initiation. Table III reveals one result of this scholastic requirement, *e.g.*, the mean point-hour-ratios[2] that were earned by the 277 successful and by the 242 unsuccessful pledges. When the data are combined for the five-year interval the successful pledges are found to have a mean point-hour-ratio of 1.450; the unsuccessful pledges have on the other hand a mean point-hour-ratio of only 0.740. And more than 97 per cent of the successful pledges reach or exceed the median of the unsuccessful.[3] These data make it quite obvious that the fraternity *initiates* are a relatively select group of students and it is equally clear that university scholarship during the first semester on the campus is a much more potent selective factor than is test-intelligence.

This latter statement is all the more defensible in light of the fact that during the past five years approximately 40 per cent of freshmen fraternity pledges at Ohio University have failed to be initiated into full fraternity membership. Of course those who failed to be initiated were precluded for various and sundry reasons. Nevertheless, as is shown in Table III, the requirement that the candidate for fraternity membership earn an average mark of "C" or above during the

[2] At Ohio University each semester hour of credit with a mark of "A" counts 3 points, and credits with marks of "B," "C," "D," and "F," are given 2, 1, 0, and 0 points respectively. The point-hour-ratio is obtained by dividing the number of points earned by a given individual by the number of hours that he carried. This ratio furnishes a convenient estimate of the quality of a student's work in terms of teachers' marks. For example, if a student carries 16 hours per week and earns 32 points, his point-hour-ratio is 2.000, which is equivalent to a "B" average in his subjects. Similarly, a point-hour-ratio of 3.00 is equivalent to an "A" average, and a point-hour-ratio of 1.000 is equivalent to a "C" average.

[3] In a few instances pledges who failed to meet the scholastic requirement were nevertheless intiated into full fraternity membership. Had the scholastic requirement been rigidly enforced, *all* of the successful pledges would have exceeded the median point-hour-ratio (0.740) of the unsuccessful pledges.

TABLE III

Point-Hour-Ratios That Were Earned During Their First Semester at Ohio University by Two Groups of Freshmen Fraternity Pledges, Namely, (1) Pledges Who Were Subsequently Initiated Into Full Membership and (2) Pledges Who Were not Subsequently Initiated Into Full Membership

	(1) FRESHMEN PLEDGED AND INITIATED						(2) FRESHMEN PLEDGED BUT NOT INITIATED					
Fall of	1928	1929	1930	1931	1932	Total	1928	1929	1930	1931	1932	Total
CLASS INTERVAL												
3.000		1				1						
2.8–2.9				1		1						
2.6–2.7												
2.4–2.5			1	1	3	5						
2.2–2.3	2	1	2	1	2	8	1			1		2
2.0–2.1	3	10	7	1	4	25	1		2			3
1.8–1.9	2	5	5	5	2	19			2	2	2	6
1.6–1.7	7	4	7	6	5	29		2	2		2	6
1.4–1.5	11	8	14	6	3	42	2		8	5	1	16
1.2–1.3	15	10	16	9	6	56		2	2	2	5	11
1.0–1.1	17	14	11	12	6	60		7	6	8	6	27
.8– .9	6	6	4	2	5	23	1	8	4	4	10	27
.6– .7		1	1		1	3	2	8	8	9	4	31
.4– .5		3			1	4	2	8	10	5	11	36
.2– .3			1			1	9	7	10	4	5	35
0– .1							6	9	9	9	9	42
Total Cases	63	63	69	44	38	277	24	51	63	49	55	242
Means	1.376	1.440	1.477	1.482	1.511	1.450	.583	.657	.804	.806	.755	.740

semester that immediately precedes the date of his initiation is one very potent selective factor.

The inadequacy of equating fraternity and non-fraternity students upon the basis of intelligence test scores is revealed further in Table IV which sets forth, for a five-year interval, the mean point-hour-ratios that were secured during their first semester at Ohio University by three groups of students that were equated upon the basis of:—(1) Sex, (2) year of matriculation at the university, and (3) percentile rating on the OSU. Table IV shows that, for the five-year interval, the 177 freshmen that were initiated into full fraternity membership earned a mean point-hour-ratio of 1.420 during the semester that immediately preceded the date of their initiation. The fraternity pledges who were equated with them upon the basis of intelligence test data, but who failed to be initiated, earned during

TABLE IV

Mean Point-Hour-Ratios That Were Earned During Their First Semester at the University by Three Groups of Students Equated Upon the Basis of: (1) Sex, (2) Year of Matriculation at the University, and (3) Percentile Rating on the Ohio State University Psychological Examination

YEAR	NO. OF CASES	FRATERNITY PLEDGES WHO WERE LATER INITIATED INTO FULL MEMBERSHIP		FRATERNITY PLEDGES WHO WERE RELEASED FROM PLEDGE MEMBERSHIP		CONTROL GROUP OF NON-FRATERNITY STUDENTS	
		P-H-R	Sigma	P-H-R	Sigma	P-H-R	Sigma
1928–29	24	1.417	.270	.658	.678	1.142	.736
1929–30	45	1.433	.468	.652	.420	1.020	.564
1930–31	45	1.420	.420	.820	.526	1.131	.546
1931–32	34	1.441	.416	.924	.542	1.076	.600
1932–33	29	1.376	.488	.741	.468	1.183	.636
Combined data							
1928–33	177	1.420	.446	.762	.526	1.102	.616

the same period of time a mean point-hour-ratio of only 0.762. And the control group of non-fraternity freshmen earned a mean of 1.102.

The three foregoing groups were equated upon the basis of

intelligence test ratings. Did this procedure equalize the three groups in any other significant way? Apparently not. As regards first-semester university marks, the rejected pledges were an inferior group. The group that was initiated into full fraternity membership was the most highly selected of the three groups. And, although matched with the other two groups upon the basis of OSU scores, the non-fraternity control group was superior to the one and inferior to the other. These statements are borne out by the following additional facts. Eighty-three per cent of the successful fraternity pledges reached or exceeded the median point-hour-ratio of the non-fraternity control group,[4] and almost 98 per cent of the successful pledges reached or exceeded the median of the unsuccessful pledges.[5]

OTHER POSSIBLE METHODS OF EQUATING

If it is not wholly valid to equate fraternity and non-fraternity students upon the basis of test intelligence (and quite obviously it is not) would it be defensible to match fraternity and non-fraternity students upon the basis of the point-hour-ratios earned by them during their first semester at the university? It has been shown elsewhere that fraternity pledges are rather highly motivated *prior to their initiation* (3). During their first semester on the university campus they seem to be putting forth unusual effort in order that they may secure marks high enough to permit them to be initiated into full fraternity membership. Of course it would not be scientifically defensible to equate student groups upon the basis of class marks if, during the interim that the marks were being earned, one of the groups were much more highly motivated than the

[4] For these two groups the difference between the mean point-hour-ratios divided by the P.E. of the difference was 8.25.

[5] The difference between the mean point-hour-ratios divided by the P.E. of the difference in this instance was 18.8. This very marked group difference is easily understood when it is recalled that the fraternity group included very few students who failed to earn an average mark of "C." The non-fraternity group on the other hand included many students who failed to earn a "C" average.

other. Such a procedure would result in this instance in obtaining a relatively inferior fraternity group. There is some statistical evidence which may be adduced in support of this statement. The writer found that, when groups were thus equated, sixty-three per cent of the non-fraternity students reached or exceeded the median OSU percentile rating of the fraternity students.

But the difficulties that must be overcome if fraternity and non-fraternity students are to be matched with scientific exactness are even more numerous than can be shown by statistics. Unless especial care is taken, the fact that a rejected pledge has been rejected is likely to be forgotten and lost sight of (in so far as the investigator is concerned). Under such circumstances the rejected pledge may be treated statistically as though he were a non-fraternity student. That is to say, the successful fraternity pledge may in some instances be matched (when equated on the basis of intelligence test data or high-school record) with an unsuccessful fraternity pledge. This sort of thing would of course not be done deliberately. But if done without intent to do the result would be none the less spurious. If rejected pledges were a rarity the foregoing point would not be worth mentioning. However, in a study made by the writer a very large number of fraternity pledges (40 per cent) were found to have been rejected, often because of inferior scholarship, and the records of these inferior students were not easily traced in every instance.

It was stated previously that some investigators have studied the scholarship records of only those students who have completed a four-year course of study, the fraternity and the non-fraternity students being equated upon the basis of (1) intelligence test data, (b) high-school records, or (3) some combination of these two "criteria of promise." This procedure is characterized by at least one other weakness than those which have previously been mentioned.

At most colleges and universities a majority of the students fail to complete a four-year course. Study of the minority who complete the four-year course of study is therefore likely

to be partial and incomplete. For example, it is theoretically conceivable that the fraternity environment might have a favorable influence upon the scholarship of some students, and an unwholesome influence upon the scholarship of certain other students. If this assumption were a valid one, and if the few (or the many) fraternity students who were unfavorably influenced were to be eliminated from college prior to the completion of the four-year course, study of only the graduates of the four-year course would fail to reveal a highly significant fact.

Economic and social factors are also operative, but it is not easy to make adequate allowance for these. At Ohio University it was found that fraternity students tend to remain in school longer than do non-fraternity students. Would it be valid to conclude upon the basis of this evidence that the fraternity environment tends to hold the student in school? After studying the problem for a time the present writer arrived at the tentative conclusion that socio-economic background was probably a very potent factor. At any rate, in order to study the problem adequately, it would be necessary to equate fraternity and non-fraternity students upon some basis that would take socio-economic background into account. This the writer was unable to do. . . .

As for the influence of the fraternity upon scholarship (in so far as the latter may be measured by means of class marks)—can this influence be studied at the present time with any great degree of *scientific precision?* The following difficulties must first be overcome. (1) In what category shall the rejected fraternity pledge be placed? And what procedure shall be employed for the study of fraternity influence upon such students? (2) How identify those students who spend more or less time and effort in the hope that they will be asked to join fraternities but who are not even asked to join? And how measure fraternity influence in such instances? (3) If we limit our attention to those students who are initiated into full fraternity membership, how shall we proceed in order that we may obtain a really adequate control group? It is obvious that

the various selective factors present an almost insuperable difficulty and that present-day atttempts to equate fraternity and non-fraternity students are of doubtful validity.

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2. MACPHAIL, A. H.: "A Comparative Study of the Quality of Academic Work Done by Fraternity and Non-Fraternity Students at Brown University," *School and Society*, 1933, *38*, 875–876.
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SOME CHARACTERISTICS OF THREE TESTS USED TO PREDICT CLERICAL SUCCESS

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THE Otis Self-Administering Test of Mental Ability, the Minnesota Vocational Test for Clerical Workers, and the O'Rourke Clerical Aptitude Test, Junior Grade, are among the tests that have been used to predict success in clerical work. Intercorrelations of different scores on these tests are discussed with respect to three general questions; *viz.*, (1) Work-limit versus time-limit administration, (2) Need for scoring, and (3) Uniqueness. (Questions regarding the validity and reliability of these tests are not considered since they change from sample to sample as the criterion and the homogeneity of the sample tested varies.)

To 211 unemployed clerical workers registered for work with The Cincinnati Employment Center, which is a Federal-State-City Public Employment Office, the following tests were administered: Otis Self-Administering Test of Mental Ability, Higher Form D with a time limit of 30 minutes, and Higher Forms A, B, or C work limit; Minnesota Vocational Test for Clerical Workers with eight and seven minutes' time limit for number and name comparisons, respectively; and O'Rourke Clerical Aptitude Test, Junior Grade (Clerical Problems) with a time limit of 20 minutes. Thirteen scores resulting from this battery were then intercorrelated as are shown in Table 1. To another group of 119 unemployed clerical workers were administered (by work-limit methods) the Minnesota Clerical, O'Rourke Clerical Aptitude Test, Junior Grade (Reasoning) and O'Rourke Clerical Aptitude Test, Junior Grade (Clerical Problems), and to thirty-one of these the Otis S–A Test. The time required for completing each test was recorded. The intercorrelation coefficients are shown in Table II.

TABLE I

Intercorrelations of Scores on Three Tests for Predicting Clerical Success

N = 211	OTIS 30 MINUTE TIME LIMIT SCORE	OTIS NUMBER ATTEMPTED IN 30 MINUTES	OTIS NUMBER WRONG AND OMITTED IN 30 MINUTES	OTIS WORK LIMIT ACCURACY SCORE	OTIS WORK LIMIT "SPEED" SCORE	OTIS WORK LIMIT WEIGHTED SCORE	MINNESOTA TOTAL NUMBER RIGHT IN 15 MINUTES	MINNESOTA NUMBERS RIGHT IN 8 MINUTES	MINNESOTA NAMES RIGHT IN 7 MINUTES	MINNESOTA NUMBERS ATTEMPTED IN 8 MINUTES	MINNESOTA NAMES ATTEMPTED IN 7 MINUTES	O'ROURKE TOTAL NUMBER IN 20 MINUTES	O'ROURKE TOTAL NUMBER ATTEMPTED IN 20 MINUTES
Otis 30 Minute Time	.900	.664	−.253	.635	−.475	.690	.481	.340	.511	.303	.360	.560	.389
Limit Score		± .026	± .044	± .028	± .036	± .024	± .036	± .041	± .035	± .042	± .041	± .032	± .040
Otis Number Attempted	.664	xx	.425	.202	−.534	.285	.524	.483	.467	.444	.474	.467	.453
in 30 Minutes	± .026		± .038	± .045	± .034	± .043	± .034	± .036	± .036	± .038	± .036	± .036	± .037
Otis Number Wrong and	−.253	.425	xx	−.407	−.119	−.366	.063	.128	.007	.112	.107	−.025	.134
Omitted in 30 Minutes	± .044	± .038		± .039	± .046	± .040	± .046	± .046	± .047	± .046	± .046	± .047	± .046
Otis Work Limit	.635	.202	−.407	.920	−.231	.956	.221	.102	.266	.086	.092	.420	.243
Accuracy Score	± .028	± .045	± .039		± .044	± .006	± .044	± .046	± .043	± .012	± .046	± .038	± .044
Otis Work Limit	−.475	−.534	−.119	−.231	xx	−.321	−.323	−.246	−.314	−.201	−.307	−.350	−.370
"Speed" Score	± .036	± .034	± .046	± .044		± .042	± .042	± .044	± .042	± .045	± .042	± .041	± .040
Otis Work Limit	.690	.285	−.366	.956	−.321	xx	.281	.124	.351	.103	.177	.454	.264
Weighted Score	± .024	± .043	± .040	± .006	± .042		± .043	± .046	± .041	± .046	± .045	± .037	± .044
Minnesota Total Number	.481	.524	.063	.221	−.323	.281	xx	.880	.908	.829	.813	.549	.481
Right in 15 Minutes	± .036	± .034	± .046	± .044	± .042	± .043		± .010	± .008	± .014	± .016	± .033	± .036
Minnesota Numbers Right	.340	.483	.128	.102	−.246	.124	.880	xx	.630	.935	.633	.450	.391
in 8 Minutes	± .041	± .036	± .046	± .046	± .044	± .046	± .010		± .028	± .007	± .028	± .037	± .039
Minnesota Names Right	.511	.467	.007	.266	−.314	.351	.908	.630	xx	.591	.831	.535	.464
in 7 Minutes	± .035	± .036	± .047	± .043	± .042	± .041	± .008	± .028		± .030	± .014	± .034	± .036
Minnesota Numbers	.303	.444	.112	.086	−.201	.013	.829	.935	.591	xx	.614	.371	.370
Attempted in 8 Minutes	± .042	± .038	± .046	± .012	± .045	± .046	± .014	± .007	± .030		± .029	± .040	± .040
Minnesota Names	.360	.474	.107	.092	−.307	.177	.813	.633	.831	.614	xx	.416	.387
Attempted in 7 Minutes	± .041	± .036	± .046	± .046	± .042	± .045	± .016	± .028	± .014	± .029		± .039	± .040
O'Rourke Total Number	.559	.467	−.025	.420	−.350	.454	.549	.450	.535	.371	.416	xx	.759
in 20 Minutes	± .032	± .036	± .047	± .038	± .041	± .037	± .033	± .037	± .034	± .040	± .039		± .020
O'Rourke Total Number	.389	.453	.134	.243	−.370	.264	.481	.391	.464	.370	.387	.759	xx
Attempted in 20 Minutes	± .040	± .037	± .046	± .044	± .040	± .044	± .036	± .039	± .036	± .040	± .040	± .020	
Mean	35.3	53.1	17.8	50.1	55.3	56.1	186.5	97.0	89.4	102.3	105.7	108.0	124.0
σ	12.0	12.9	10.1	11.6	26.3	15.1	45.7	22.3	27.8	23.8	31.4	29.8	22.8

I. *Can work-limit be substituted for time-limit administration?*

The results of previous studies upon this question are equivocal. Thurstone[1] using the work-limit method for the "clerical examination" found both accuracy and speed to be valid scores. In a study[2] of the effect of increasing the time limits of Army Alpha, it was concluded that the present time limits are as satisfactory as doubled time-limits would be. Ruch and Koerth[3] verified these findings and also studied the effect of allowing unlimited time on Alpha. They obtained a very high correlation between the two procedures. Unfortunately their results are erroneous due to the elimination of the middle 80 per cent of the distribution of scores. However, by using part of their data and by assuming a more nearly random sample, an estimate shows a high relationship between time-limit and work-limit Army Alpha scores. Paterson and Tinker[4] found that the two methods of administering the Chapman-Cook Speed of Reading Test correlate with each other as highly as either method agrees with itself. McNemar[5] concluded from a laboratory experiment, "Work limit scores are interchangeable with time limit scores, except in the case where skewed distributions result from one type of score." Workman,[6] studying different forms of the Ohio State Psychological Test, wrote "The correlations found in this study between time limit scores and work limit scores are lower than the findings of most other studies reported." (See table.)

[1] L. L. Thurstone, "A Standardized Test for Office Clerks." JOURN. APPL. PSYCHOL., 1919, 3, 248–251.

[2] *Memoirs Nat. Acad. Sci.*, XV, 1922, 415–420.

[3] G. M. Ruch and W. Koerth, "Power *vs.* Speed in Army Alpha." *Journ. Educ. Psychol.*, 1923, 14, 193–208.

[4] D. G. Paterson and M. A. Tinker, "Time Limit *vs.* Work Limit Methods." *Amer. Journ. Psychol.*, 1930, 42, 101–104.

[5] Q. McNemar, "Work Scores Versus Time Scores." *Amer. Journ. Psychol.*, 1934, 46, 462–464.

[6] B. E. Workman, "The Work-Limit Versus the Time-Limit Method in the Construction and Administration of College Ability Tests." *Ohio College Association Bulletin*, 1932, 79, 963–973.

TIME LIMIT ADMINISTRATION	WORK LIMIT ADMINISTRATION	NO. CASES	r
Form 12	Form 9	110	.79
" 12	" 10	115	.82
" 12	" 11	122	.72
" 14	" 15	71	.59
" 14	" 16	57	.80

On the other hand, F. S. Freeman's[7] studies of the Dearborn, National, Terman Group, Otis General Intelligence Examination, and the Ohio State University Psychological Test have shown that the two methods *may* or *may not* be interchangeable. His studies lead to the inference that only by experiment can the question be answered, and then only for the test under observation.

Since the two methods do not always yield the same results, the question now arises, Why aren't the two methods interchangeable? Most answers have introduced a factor of speed along with the attribute being measured (sometimes renamed accuracy, power, or level).

In the work limit technique speed is eliminated, or if the time required to finish the test is recorded, it becomes a separate score. In the present study the rapidity with which the test was answered was recorded and called "speed." (This is incorrect as in a test for measuring speed accuracy must not vary.) The directions printed on the test blanks were not changed and may have been an uncontrolled factor.

Table II shows consistent positive correlations of a significant value between the various times (or "speed" scores) on the four different tests. It is evident that "speed" is common in all four test scores. Whether this is a part of mental ability cannot be established as a result of this study. McFarland[8]

[7] F. S. Freeman, "Power and Speed: Their Influence upon Intelligence Test Scores." JOURN. APPL. PSYCHOL., 1928, 12, 631–635; F. S. Freeman, "The Factors of Speed and Power in Tests of Intelligence." *Journ. Exper. Psychol.*, 1931, 14, 83–90.

[8] R. A. McFarland, "The Rôle of Speed in Mental Ability. *Psychol. Bul.*, 1928, 25, 595–612; R. A. McFarland, "An Experimental Study of Relationship between Speed and Mental Ability." *Journ. Gen. Psychol.*, 1930, 3, 67–97.

TABLE II

Intercorrelations of Scores on Four Tests Given by Work Limit Methods
119 Subjects

(Only 31 Subjects Took the Otis Test)

	OTIS S-A HIGH		MINN. VOC. TEST FOR CLERICAL WORKERS		O'ROURKE CLERICAL APTITUDE			
					REASONING		CLERICAL PROBLEMS	
	Accuracy	Time	Time	Quotient	Accuracy	Time	Accuracy	Time
Otis	xx	.03	−.04	.04	.54	−.16	.28	−.21
Time		xx	.60	−.67	−.28	.56	−.24	.60
Minn. Time			xx	−.83	−.06	.46	−.04	.45
Quotient				xx	.17	−.40	.22	−.41
Reas.					xx	.17	.68	−.07
Time						xx	−.15	.45
Cler.							xx	−.10
Time								xx

says, "The results seem to show that there is a general factor in the various mental tasks presented to the subjects of this investigation and that the measures of speed obtained involve general ability. . . . Speed of reaction is one of the most important factors in individual differences in ability to react to mental tasks." The topic of speed has been reviewed by Beck[9] and by Tinker.[10]

In an employment office it is often desirable and sometimes necessary to test applicants singly or in small groups. To record only starting time and finishing time is much more convenient, economical, and accurate than watching for the end exactly 2, 3, 7, 8, 15, 16, 20, or 30 minutes. This is necessary if one used almost any of today's published tests. When hundreds of tests are administered in a year, it is a question of no small concern to know that each one has been absolutely correctly timed if the time-limit technique is followed. Unless

[9] Beck, "The Rôle of Speed in Intelligence." *Psychol. Bul.*, 1933, 30, 169–178.

[10] M. A. Tinker, "Speed in Intelligence." JOURN. APPL. PSYCHOL., 1934, 18, 189–196.

the time limits are maintained without deviation, comparisons between scores and norms are inaccurate and invalid. On the other hand it is evident that when groups of twenty or more can be tested simultaneously as in schools or surveys, the time-limit technique has its advantages. Hence to be able to use either method interchangeably appears most desirable.

At present few tests have been standardized on the work-limit basis. The Thurstone Clerical Examination has been mentioned. The O. S. U. Psychological Tests have been changed from time-limit to work-limit not only to increase the validity, but also to eliminate erroneous scores resulting from a failure to observe time limits.

Are work-limit scores equivalent to time-limit scores on the Otis Self-Administering, using 30 minute scores, as representative of 15 minute or 20 minute scores?[11] The correlation of .635 shows that they are not. After correcting for attentuation the correlation is not greater than .70 and the coefficient of alienation is equally high. Perhaps "speed" is emphasized in the first part of the test and power in the last part, since the mean score is below the middle of the scale.

How well can Otis 30-minute scores be predicted from Otis work-limit scores and from the time required to finish the test?[12] The empirical method of weighting time and accuracy devised by Otis for "the General Intelligence Examination designed especially for business institutions" raises the correlation with 30′ scores from .635 to .690. By using the time required to complete the test (variable 5 in table 1) and the work-limit score (variable 4), the multiple correlation reaches .72 which is still too low to lead one to conclude that the two are sufficiently related to permit shifting from time to work limit. The time required to complete this test (work-limit) correlates with the time-limit score −.47. This suggests that "speed" has a slight relationship to the time-limit score. The time

[11] C. C. Miles, "The Otis S-A as a Ffteen Minute Intelligence Test." *Personn. Journ.*, 1931, 10, 246–249.

[12] H. P. Longstaff and J. P. Porter, "Speed and Accuracy as Factors in General Psychology." Jour. Appl. Psychol., 1928, 12, 636–642.

required to complete the test correlates – .23 with the accuracy score (both work-limit) which is a lower relationship than the above, and in table 2 this correlation equals .03.

In considering the Minnesota Clerical Test, the high correlations between score (rights minus wrongs) and items attempted suggests that rapidity in completing the test is very important. The items are so easy that accuracy is negligible. A number of tests have been given by work-limit and scored as follows: [Number right minus number wrong] divided by number of minutes required. This quotient is comparable with the time-limit score divided by 15. With a sample of 89 boys and girls the correlation between the time-limit score and work-limit score equals .823, [31 boys alone .873; 58 girls alone .792.]* (The correlation between time score on the work-limit test and time-limit score –.648; [31 boys –.604; 58 girls –.613.]) The methods appear interchangeable, since this correlation when corrected for attenuation approximates unity. In Table II, the correlation between quotient and time on Minnesota Clerical substantiates the view that speed is of major importance in this test; the correlation of .12 between accuracy and time shows that accuracy is of little importance, while the correlation of time and quotient (– .83) emphasizes the weight of speed.

In regard to the O'Rourke Clerical Aptitude Test, Junior Grade (Clerical Problems) the items are too easy or the time limit too long, as the distribution of scores is markedly skewed downward. Our scores compare closely with norms furnished with the test. With work-limit administration, this skewness becomes greater. The different degrees of relationship with Minnesota and Otis in the two tables suggests that it cannot be shifted from time-limit to work-limit. The correlation of .76 between rights and attempts suggests speed may be an important part in the test.

* Since women score higher than men, combining the two sexes for reliability yields spurious results.

II. *How much information can be secured by an inspection of the unscored blank?*

In case of a time-limit test, if the number of items attempted is below the critical score, it is evident the test need not be scored. In large examinations this fact is said to be a means of economy for Civil Service Commissions.

A novel use of an unscored test is reported by Shellow[13] who finds that the unscored Strong's interest blank is an aid in interviewing. It affords a means of establishing rapport, and causes the interviewee instead of the interviewer to talk which reveals hints of his personality traits, interests, and motivating forces that may be probed farther in the course of the interview.

Scoring tests not only involves a considerable portion of the expense in testing, but also provides an additional opportunity for error in the measuring process. The development of mechanical devices for scoring lends support to this opinion. Pintner's[14] and Dearborn's[15] results of re-scoring tests are surprising. The necessity of spot checking of scoring is widely recognized.

While considering an applicant for employment, it is often advantageous to know immediately upon completion of the test the probable rating the applicant will receive. If this rating can be estimated by observing the number of items attempted, the time required, or some other attribute and this estimate can be used with a fair degree of accuracy in place of the more exact but less available score, the decision regarding employment may be hastened.

The Otis Self-Administering involves a "speed" factor to a considerable extent. The correlation between Otis time-limit score and the number of items attempted in that time, e.g., how

[13] S. M. Shellow, "Vocational Interest Blank as an Aid to Interviewing." *Person. J.*, 1931, 9, 379.

[14] Pintner, "Accuracy in Scoring Group Intelligence Tests. *Jr. Ed. Psychol.*, 1926, 17, 470–475.

[15] W. F. Dearborn and C. W. Smith, "The Results of Recording Five Hundred Dearborn Tests." *Jr. Ed. Psychol.*, 1929, 20, 177–183.

far the subject was able to progress in 30′ is .66. This is high enough to show that some covered the ground fast enough to secure a higher score than others. Attempts correlate with work-limit accuracy score .20 and with the work-limit "speed" score −.53; showing a greater relationship with speed (as measured by time required to complete this test). If given by a work limit, it is necessary to score the test (since there is no relationship between "speed" and accuracy).

In regard to the Minnesota Clerical Test, if the items attempted be correlated with the score (obtained in the usual manner, i.e., the number right minus the number wrong, thus correcting for chance), there is secured .93 for the number comparison and .83 for the names comparison, Table 2. These coefficients appear to be high enough to justify experimentation with a view toward producing a test which requires no scoring. An inquiry on this question from Professor Paterson resulted: "For 175 women in the standard sample the correlation between R − W score and the number attempted for the number comparison is .96; for the names comparison test the correlation is .89. For clerical workers in a large hospital (where the criterion was very good) the contingency coefficient between the number attempted and the criterion was .57; for R. minus W. scoring and the criterion C equals .54. These two correlations are based upon scores for both the number comparison and the name comparison tests combined. These correlations suggest that the number attempted could be used as the score especially for the number comparison test."[16]

III. *Are these tests sufficiently unrelated to warrant the use of a battery of more than one?*

Hull[17] has shown that there is a principle of diminishing returns in the yield secured by adding correlated tests to a battery. Therefore a single test may give results almost as good as two or more tests. If the Otis Self-Administering is

[16] Published by courtesy of Prof. Donald G. Paterson from correspondence of Feb., 1935.

[17] Clark Hull, "Aptitude Testing." World Book Co., p. 249.

given by work limit almost no correlation results between its accuracy score and Minnesota Clerical Test score. The latter presumably measures any "speed" factor which may be involved in the tests studied. Assuming both to possess some validity, combining these two independent scores would increase prediction maximally. When the Otis Self-Administering is given with time limit, the correlation between it and the Minnesota Clerical reduces their joint efficiency.

Table 2 shows that the Otis Self-Administering and O'Rourke Reasoning are related both in accuracy and speed to such an extent that the addition of both to a battery may be unwarranted. Accuracy on the Otis Self-Administering and accuracy on O'Rourke Clerical Problems are only slightly related, but speed is significantly correlated. In a similar degree is the Minnesota Clerical and O'Rourke related. The two O'Rourke Tests are surprisingly correlated in accuracy. Speed and accuracy on the respective tests are found to be unrelated—a not unusual finding. Table 1 shows that the O'Rourke Clerical adds little to either Otis or Minnesota.

From practical considerations, cost, time-required, scoring difficulty, the Otis and Minnesota Clerical appear to be the best two of the group studied.

READER INTERESTS IN VARIOUS TYPES OF NEWSPAPER CONTENT

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DURING the latter part of the school year 1933–34, the authors devised a three-page questionnaire or reading report blank designed to elicit information from certain groups of newspaper readers concerning: (1) Their interests in certain sections of the newspaper, (2) Their interests in certain types of news stories, and (3) Their attitudes toward certain questions of newspaper policy and practice. The mimeographed reading report blank was administered to samples of the population groups listed below.

(1) Freshman and upper class students at the University of Arkansas.

(2) Business and professional men and women, and housewives of Fayetteville, Arkansas, and vicinity.

(3) Journalism students of the University of Arkansas and journalists from various Arkansas high schools.

Care was taken with each group to obtain as random a sampling as possible. Of the 515 questionnaires, 225 were obtained from the University students, 165 from the adult citizens, and 125 from the student journalists. As the reliability coefficients discussed later in the paper indicate, these samplings of different population groups are sufficiently large to be representative of the populations from which they are drawn.

This paper will deal with the first two aspects of the investigation.[1] Data concerning reader interests in the sixteen desig-

[1] The third aspect of the investigation is treated in the following reference: J. A. Thalheimer and J. R. Gerberich, "Reader Attitudes toward Questions of Newpaper Policy and Practice," *Journalism Quarterly*, 12: 266–71, September 1935.

nated sections of the newspaper are presented in Table I, while similar data concerning the forty-two designated types of news stories are set forth in Table II.

For interests in both the sixteen sections and the forty-two types of news stories, responses were obtained to indicate whether the person checking the questionnaire had great, average, or no interest in each individual item. A single score or index, hereafter referred to as a group interest score, was computed for each group of subjects for each item of these two lists. These group interest scores were obtained by assigning a weight of three to each response indicating great interest, a weight of two to each response showing average interest, and a weight of one to each response indicating no interest and then dividing the sum of the three by the number of persons in the group who responded to the item in question.

Group scores were obtained in this manner separately for both men and women of each group listed above. It is apparent from the above that the group scores would necessarily lie somewhere between 1.00 and 3.00, and that the higher scores would indicate greater relative interest and the lower scores relatively less interest.

Reliability coefficients show a range from .68 for journalism men to .93 for adult women for the portion of the questionnaire dealing with the sixteen sections of the newspaper.[2] Comparable coefficients based on the forty-two types of news stories ranged from .77 for journalism men to .95 for journalism women. Of the twelve reliability coefficients only two, and both of those for the relatively small sampling of journalism men, were below .80, while eight of the twelve were above .85 and six above .90. The degree of consistency shown by these reliability coefficients is entirely adequate for the purposes of the group comparisons made, with the possible exception of the data for journalism men.

[2] The method used is an adaptation of a system used by Douglas Waples and Ralph W. Tyler in "What People Want to Read About," Chicago, University of Chicago Press, 1931, p. 174 ff., in an exhaustive investigation of book reading interests.

TABLE I

Interests of Certain Groups of Newspaper Readers in the Different Sections of the Newpaper

SECTION	UNIV. STUDENTS			ADULT CITIZENS			STUDENT JOURNALISTS			TOTALS		
	M	W	Both	M	W	Both	M	W	Both	M	W	Both
Advert.	1.79	2.05	1.92	1.67	2.23	1.94	2.03	2.08	2.06	1.83	2.12	1.97
Art	1.47	2.02	1.74	1.71	2.06	1.89	1.65	1.74	1.69	1.61	1.94	1.77
Books	1.77	2.12	1.95	2.11	2.27	2.19	1.85	2.18	2.02	1.91	2.19	2.05
Columns	2.06	2.02	2.04	2.05	2.21	2.13	2.46	2.54	2.50	2.19	2.25	2.22
Comics	2.24	2.29	2.26	2.06	1.98	2.02	2.60	2.29	2.42	2.28	2.19	2.24
Editorials	2.22	2.04	2.13	2.59	2.38	2.48	2.18	2.07	2.13	2.33	2.16	2.24
Financial	1.94	1.51	1.72	2.11	1.85	1.98	1.52	1.28	1.40	1.85	1.55	1.70
Gen. News	2.60	2.43	2.51	2.64	2.62	2.63	2.61	2.48	2.55	2.62	2.51	2.56
Music	1.70	2.15	1.92	1.71	2.07	1.89	1.68	1.89	1.78	1.69	2.04	1.86
Radio	1.98	1.99	1.98	1.76	1.86	1.81	2.18	2.04	2.11	1.97	1.96	1.97
School	2.09	2.30	2.19	2.35	2.45	2.40	2.19	2.34	2.29	2.21	2.38	2.29
Serials	1.31	1.74	1.52	1.33	1.78	1.55	1.90	1.92	1.91	1.51	1.81	1.66
Society	1.62	2.37	1.99	1.33	1.91	1.62	1.64	2.39	2.01	1.53	2.22	1.88
Sports	2.67	2.37	2.52	2.22	1.74	1.98	2.70	2.24	2.47	2.53	2.11	2.32
Theater	2.00	2.21	2.10	1.86	2.12	1.99	2.16	2.20	2.18	2.01	2.17	2.09
Women's	1.29	2.38	1.83	1.27	2.30	1.78	1.41	2.28	1.84	1.32	2.32	1.82

Of the many possible comparisons which could be made from the data of Table I, several are of outstanding significance. For the sex groups and all subjects combined, general news is the most interesting newspaper feature. School news, comics, and columns rank near the top for all three groups, while editorials and sports are not far behind. Serial stories rank lowest in relative interest, while art is also placed low in all rankings. Sex differences for several sections, notably women's, financial, and music, keep them from consistent ranking in the three groups. The men show greater interest in sports and financial news, and less interest in women's and music pages than do the women.

For two of the three combined groups of students—adult citizens and student journalists—general news also takes first place. For the university students, however, sports rank above general news by a very narrow margin. Sports rank relatively high also for the student journalists, but well down the list for the adult citizen. Editorials, on the other hand,

TABLE II

Interests of Certain Groups of Newspaper Readers in the Different Types of Newspaper Stories

TYPES OF STORIES	UNIV. STUDENTS			ADULT CITIZENS			STUDENT JOURNALISTS			TOTALS		
	M	W	Both	M	W	Both	M	W	Both	M	W	Both
1 Agriculture	1.90	1.90	1.90	2.23	1.87	2.05	1.57	1.15	1.36	1.90	1.64	1.77
2 Animals	1.98	1.67	1.82	1.89	1.82	1.86	1.77	1.74	1.76	1.88	1.74	1.81
3 Architecture	1.55	1.64	1.59	1.78	1.80	1.79	1.35	1.73	1.54	1.56	1.72	1.64
4 Art	1.48	2.02	1.75	1.73	2.06	1.89	1.48	1.76	1.62	1.56	1.95	1.75
5 Aviation	2.12	1.78	1.95	1.92	1.60	1.76	2.20	1.91	2.05	2.08	1.76	1.92
6 Biography	1.74	1.82	1.78	2.00	2.01	2.00	1.95	1.74	1.84	1.90	1.85	1.87
7 Books	1.84	2.07	1.95	2.10	2.32	2.21	1.95	2.29	2.12	1.96	2.23	2.09
8 Business	1.98	1.71	1.84	2.27	1.93	2.10	2.01	1.67	1.84	2.08	1.77	1.93
9 Children	1.61	1.92	1.77	2.06	2.46	2.26	1.76	2.00	1.83	1.76	2.13	1.95
10 Crime	2.11	1.99	2.05	2.01	1.79	1.90	2.29	2.18	2.23	2.14	1.99	2.06
11 Drama	1.75	2.10	1.92	1.69	2.15	1.92	1.99	2.22	2.10	1.81	2.15	1.98
12 Economics	2.08	1.96	2.03	2.33	2.13	2.23	1.99	1.35	1.67	2.13	1.98	2.05
13 Education	2.09	1.98	2.03	2.48	2.35	2.41	2.14	2.03	2.08	2.24	2.12	2.18
14 Engineering	1.84	1.43	1.64	1.91	1.41	1.66	2.15	1.33	1.74	1.96	1.39	1.68
15 Exploration	2.20	1.93	2.06	2.20	2.00	2.10	2.30	1.98	2.14	2.23	1.97	2.10
16 Finance	2.00	1.61	1.80	2.01	1.77	1.86	1.71	1.38	1.54	1.90	1.58	1.74
17 Gardening	1.58	1.86	1.72	1.85	2.11	1.98	1.43	1.55	1.49	1.62	1.84	1.73
18 History	2.07	1.90	1.99	2.32	2.21	2.27	2.37	2.01	2.19	2.25	1.89	2.07
19 Human Int.	2.23	2.14	2.18	2.25	2.38	2.31	2.55	2.69	2.62	2.34	2.40	2.37
20 Labor	2.04	1.65	1.85	2.22	1.96	2.09	2.09	1.69	1.88	2.11	1.76	1.94
21 Law	2.04	1.58	1.81	1.91	1.65	1.78	1.90	1.91	1.90	1.95	1.71	1.83
22 Medicine	2.02	1.69	1.86	1.99	1.80	1.87	1.72	1.85	1.78	1.89	1.78	1.84
23 Movies	2.14	2.23	2.18	1.81	1.99	1.90	2.30	2.53	2.42	2.08	2.25	2.17
24 Music	1.73	2.16	2.05	1.72	2.10	2.00	1.75	2.11	1.93	1.73	2.12	1.93
25 Personals	1.88	2.23	2.05	1.82	2.19	2.00	1.87	2.39	2.13	1.85	2.31	2.08
26 Photographs	2.13	2.28	2.20	2.00	2.16	2.08	2.47	2.51	2.49	2.20	2.32	2.26
27 Int. Polit.	2.14	1.92	2.03	2.39	2.00	2.19	2.14	2.17	2.15	2.22	2.03	2.13
28 Local Polit.	2.39	2.10	2.24	2.49	2.12	2.30	2.25	2.22	2.24	2.38	2.15	2.27
29 Natl. Polit.	2.42	2.09	2.26	2.53	2.06	2.29	2.44	2.22	2.33	2.46	2.12	2.29
30 State Polit.	2.46	2.05	2.25	2.53	2.05	2.29	2.36	2.18	2.27	2.45	2.09	2.27
31 Radio	1.98	2.02	2.00	1.90	1.96	1.93	2.23	1.97	2.10	2.04	1.97	2.01
32 Religion	1.91	2.11	2.01	2.12	2.18	2.15	1.98	1.98	1.98	2.00	2.09	2.04
33 Scandal	1.73	1.78	1.76	1.57	1.61	1.59	1.95	2.32	2.31	1.75	1.90	1.83
34 Science	2.29	2.01	2.15	2.30	2.09	2.19	2.45	2.08	2.27	2.34	2.06	2.20
35 Self-Impr.	2.26	2.36	2.31	2.25	2.44	2.34	2.11	2.50	2.31	2.20	2.43	2.32
36 Sex	1.94	1.93	1.93	1.81	1.65	1.73	2.11	2.08	2.09	1.95	1.88	1.92
37 Society	1.67	2.35	2.01	1.55	1.86	1.71	1.83	2.34	2.08	1.68	2.18	1.93
38 Sociology	1.71	1.94	1.82	2.12	2.04	2.08	1.97	1.86	1.91	1.93	1.95	1.94
39 Sports	2.53	2.34	2.43	2.13	1.84	1.98	2.60	2.35	2.47	2.42	2.17	2.30
40 Styles	1.67	2.60	2.13	1.56	2.24	1.90	1.96	2.67	2.31	1.73	2.50	2.12
41 Travel	2.19	2.57	2.38	2.11	2.49	2.30	2.21	2.70	2.45	2.17	2.58	2.38
42 War	2.27	2.06	2.16	2.37	1.97	2.17	2.43	2.28	2.36	2.35	2.10	2.23

are ranked high by the adult citizens but relatively low by both of the other groups. Lowest rankings are given to serial stories by the university students and adult citizens, but the student journalists rank them considerably higher. Financial news receives a higher ranking by the adult citizens than by the other groups, but society news appears to be of relatively more interest to the university students and journalists. Sections ranked relatively low by all three groups are women's, art, and music.

Table II presents data comparable to those of Table I in method of derivation and significance for the forty-two specific types of news stories.

In the discussion of the sixteen sections of the newspaper, it was possible to treat the findings by the rank order of group interest scores. However, the greater number of news story types would make that method cumbersome here. Therefore, the forty-two types of stories have been divided into quintiles or fifths on the basis of the group interest scores. The nine highest scores were placed in Quintile I, the nine lowest scores in Quintile V, and the remaining twenty-four scores in descending order in Quintiles II to IV for each of the major groups. This grouping is sufficiently fine for the present purpose and will permit of much simpler interpretation than a rank method.

The data of Table II further fail of easy interpretation because of their bulk. Therefore, their most significant aspects are brought out in the four following tables. The commonality or agreement of interests for all men and all women is shown in Table III both for the items of great interest and for those of little interest. Those types of news stories ranked in Quintiles I or II by both groups are included in the former, while those listed in Quintiles IV or V by both groups are listed under the latter.

The two highest-ranking types of news stories in the preferred reading list are travel and human interest. These are followed in descending order of preference by self-improvement, sports, national and local politics, photographs, war, and education. The range of interest shown by these topics is

TABLE III

Types of News Stories or Articles Preferred and Avoided by Both Men and Women

TOPIC NO.	PREFERRED BY BOTH	TOPIC NO.	AVOIDED BY BOTH
13	Education	1	Agriculture
19	Human Interest	2	Animals
26	Photographs	3	Architecture
28	Local Politics	4	Art
29	National Politics	6	Biography
35	Self-Improvement	16	Finance
39	Sports	17	Gardening
41	Travel	22	Medicine
42	War	33	Scandal
		38	Sociology

obviously rather great and evidences considerable spread of interests in the preferred news story types. The types of items most avoided, in increasing order of interest, are architecture, gardening, finance, art, agriculture, animals, scandal, medicine, biography, and sociology. It seems apparent that on the whole the items in this last list are more specialized and therefore have less general or widespread appeal to newspaper readers. It is interesting to note that biography, a field among those most heavily represented in book publications, ranks very low in interest to newspaper readers. This finding shows even less newspaper reading interest than Waples and Tyler found for book reading interest, as shown by their conclusion that "biography stands at about the middle of the list when the topics are arranged in the order of relative interest for all groups."[3]

While Table III shows that nine types of news stories are ranked by both groups as preferred reading and ten types as avoided, conclusions should not too quickly be drawn that sex differences in newspaper reading interests are not great. Table IV lists those topics upon which the sex difference in interests is at least three quintiles—from Quintiles I to IV or II to V. Obviously this great a range of difference rather narrowly

[3] Waples and Tyler, *op. cit.*, p. xxvi.

TABLE IV

Sex Differences in Preferences for Types of News Stories or Articles

TOPIC NO.	MEN Topics Preferred	QUINTILE RANK	WOMEN Topics Preferred	QUINTILE RANK
9		V	Children	II
11		V	Drama	II
18	History	I		IV
24		V	Music	II
25		IV	Personal Items	I
37		V	Society	I
40		V	Styles	I

limits the possibilities, so that the differences obtained by this method are unquestionably significant.

It is shown in Table IV that sex differences in newspaper reading interests indicated by a displacement of at least three quintiles in ranking are found for seven topics. Of the seven, six show greater interest on the part of the women and one greater interest for the men. The greatest quintile displacements are found for styles and society news, both of which would normally have a greater appeal for women than men. It is not quite so clear why some of the other differences are so great, but the explanation probably lies in the nature of the samplings of newspaper readers obtained.

Information concerning topics preferred and avoided by all three of the reader groups is given in Table V. Here again the requirement for listing a topic as preferred is that it be in one of the two highest quintiles for all groups and for listing it as avoided that it be in one of the two lowest quintiles for all groups.

The list of preferred and avoided topics in Table V is rather surprisingly long when it is considered that ranking in the upper or lower two-fifths in all of the three groups differing rather widely in age and economic status is a requirement for inclusion. Some of the same topics which occurred in Table III appear here also, indicating a rather general interest or disinterest for all groups and both sexes in such topics. However, the occurrence of some new topics here and the omission

TABLE V

Types of News Stories or Articles Preferred and Avoided by All Groups

TOPIC NO.	PREFERRED BY ALL	TOPIC NO.	AVOIDED BY ALL
15	Exploration	2	Animals
19	Human Interest	3	Architecture
28	Local Politics	4	Art
29	National Politics	14	Engineering
30	State Politics	16	Finance
34	Science	21	Law
35	Self-Improvement	22	Medicine
41	Travel		
42	War		

of some listed in Table III indicate that sex differences and differences in age and economic status operate differently with respect to newspaper reading interests. In descending order of interest for the combined groups, the preferred topics are travel, human interest, self-improvement, national, state, and local politics, war, science, and exploration. The avoided topics in increasing order of interest are architecture, engineering, finance, art, animals, law, and medicine.

Table VI shows the topics on which the three groups differ most widely in interests. The topics listed here are those upon which the range of quintile placement among the three groups is at least three quintiles from highest to lowest.

TABLE VI

Group Differences in Preferences for Types of News Stories or Articles

TOPIC NO.	TOPIC	QUINTILE PLACEMENT		
		Univ. Students	Adult Citizens	Student Journalists
9	Children	V	I	V
18	History	IV	I	II
23	Movies	I	IV	I
33	Scandal	V	V	I
40	Styles	II	IV	I

Of the differences shown in Table V, the greater interest in children for the adult citizens and in movies by the student groups are easily understandable. However, the differences shown for history and scandal in particular are more difficult to explain in terms of the varying compositions of the three groups in question.

So far this paper has dealt somewhat specifically with the similarities and differences in newspaper reading interests of groups differing in sex and in age and economic status. Some data will now be presented to show in more general terms the operation of these factors in their influence upon reading interests. Table VII lists coefficients of correlation to show the degree of relationship in reading interests between groups differing in sex, age and educational status, and age and economic status. The correlation coefficients of the first series, pertaining to the sixteen sections of the newspaper, are Pearson "product-moment" coefficients obtained by transmutation from rank-order (rho) coefficients.[4] The coefficients of the second series, pertaining to the forty-two types of news stories, are of the same nature but were obtained directly by the usual technique.

TABLE VII

Intercorrelations between Group Interest Scores for the Various Groups

NATURE OF DIFFERENCE	GROUP	CORRELATION COEFFICIENTS	
		Sections	Stories
Sex	University Students	.27	.17
	Adult Citizens	.35	.32
	Student Journalists	.51	.54
Age and Econ. Status	University Students *vs.* Adult Citizens	.67	.50
	University Students *vs.* Student Journalists	.90	.77
	Adult Citizens *vs.* Student Journalists	.66	.29

[4] Henry E. Garrett, "Statistics in Psychology and Education," New York, Longmans, Green and Co., 1926, pp. 190–92.

For sex differences in reading interests, the range of the six coefficients is from .17 to .54. The average of .36 for these coefficients gives a general indication of the degree of relationship existing between the reading interests of groups differing only in sex. These findings indicate the probability of greater sex differences in newspaper reading interests than in book reading interests when they are compared with Waples and Tyler's findings, which led them to conclude that, "on the average, the reading interest scores of two groups who differ in sex alone agree only to the extent represented by a correlation coefficient of about .55."[5]

The three remaining pairs of coefficients show the relationships existing between groups differing in several ways. The university students and student journalists, differing somewhat in average age but mostly in occupational prospects, relate to the fairly high degree shown by coefficients of .90 and .77. The relationships shown by coefficients of .67 and .50 for university students and adult citizens, differing in age and economic status mainly, are somewhat lower, while the relationships between adult citizens and student journalists, differing mainly in age and economic status, are slightly lower yet.

With the exception of sex differences, the correlations listed are not numerous enough for valid comparisons with Waples and Tyler's findings. However, the findings of this study strongly suggest that sex differences are greater in newspaper than in book reading interests, and, in general harmony with their findings, support the much closer relationships between groups differing only in economic or occupational status.

[5] Waples and Tyler, *op. cit.*, p. 146.

THE EFFECT OF ANALGESIC DOSAGE OF ASPIRIN (ACETYL SALICYLIC ACID) ON SOME MENTAL AND MOTOR PERFORMANCES

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IN spite of the relatively large number of investigations concerning the psychological effects of the common habit forming substances, alcohol, caffeine, and tobacco, very little attention from a psychological point of view has been devoted to the effects of drugs widely used for therapeutic, anaesthetic, hypnotic or other medical purposes.

The study herewith reported deals with the effect of the common analgesic, acetyl salicylic acid or aspirin upon a sampling of motor and mental performances: pulse, steadiness, reaction time, addition, code translation, and giving opposites.

A summary of more than six hundred reports on the physiological and clinical effects of aspirin is given by Hanzlik (2). The principal clinical uses of the drug are as (1) an analgesic, and (2) an antipyretic. As an analgesic small doses, depending on the individual, are used. It seems to have no peripheral action at the site of a painful disturbance, but to act as a "central depressant," the mechanism of its action being very poorly understood. Even in large quantities it produces insufficient anaesthesia for the performance of minor surgery. With some individuals, at least, the analgesic effect is accompanied by a mild hypnotic tendency. As an antipyretic various doses of the drug, up to "full therapeutic dose," are used. This maximum dose is used particularly in the treatment of rheumatic fever. It is given by administering small doses hourly until symptoms of toxicity begin to appear, these being principally auditory tinnitus and deafness and gastric disturbance. (The physiology of the auditory disturbance is not certain.) The average "full therapeutic dose for men is 165 gr.; for women 120 gr." In both large and small doses aspirin pro-

duces sweating, which is undoubtedly, in part, the mechanism of its antifebrile action. That it reduces temperature in fevered patients seems well established, though there is some doubt as to whether it reduces normal temperature. The supposed specificity of aspirin for rheumatic fever is believed to be explained on the basis of its analgesic and antifebrile effects.

Certain individuals are hypersensitive in their response to aspirin, showing symptoms like those of an allergic reaction. In Hanzlik's summary, and later by Bowman (1), are reported several cases in which after large doses of aspirin definite psychotic symptoms appeared, such as hallucinations, delusons, and mania.

The one psychological study dealing with the effects of aspirin appears to be that of Macht, Isaacs, and Greenberg (3) in which the effect of the drug on reaction time was investigated. Although the procedure involved no control dose, and the results on the three subjects were somewhat ambiguous, the writers believed the conclusion justified that reaction time is slower under the influence of the drug, particularly reaction times of the simpler sort.

In the present experiment 33 university students furnished the main body of data. The performances tested were selected to represent various levels of complexity. Each subject served at three experimental hours, once with no dose, after a dose of 10 gr. of aspirin, and once after a control dose. The aspirin was powdered and administered in a gelatine capsule; as a control dose an empty capsule was used. The subjects were required to close their eyes while taking the capsules. In order to neutralize the effects of learning, the order of the doses was varied so that equal numbers began with each of the three conditions. The testing began approximately five minutes after the dose was taken, and the series lasted approximately 45 minutes. Salicyl has been reported in the urine within several minutes after ingestion (Hanzlik); it might be expected, therefore, that any psychological effect would appear at this time. However, since the test series lasted over 45 minutes, it is to be noted that the average interval between dose and test was

about half an hour. The order of tests within a sitting was varied to neutralize effects of preferential position.

Tests were as follows:

1. Steadiness test. A form of the ordinary stylus-in-hole apparatus. The subject was required to stand before it holding the stylus in the hole at arm's length, endeavoring not to make contact, for one minute. Number of contacts was recorded by an electric counter.

2. Reaction time. The subject reacted to the click of a key, preceded by a ready signal. The time of reaction was registered by a Bergstrom chronoscope. Thirty-five reactions were taken from each subject at each sitting. In calculation the five most extreme times in either direction were discarded and an average computed for the remaining 25 trials..

3. Addition. A series of addition problems, each consisting of three five place numbers was given the subject. He was instructed to add as rapidly and accurately as possible for three minutes. Number of columns and number of errors made were counted as score. Three sets of problems were used and rotated among the various experimental conditions.

4. Opposites. A fifty word opposites test of considerable difficulty was given the subject. He was instructed to complete the test, time and errors constituting the score. The same words arranged in different order were used for the various experimental conditions.

5. Code translation. A digit-letter test with 40 five place numbers to be translated was used. The work limit method was used, time and errors constituting the score. For the several experimental situations different codes were used.

6. On fourteen of the subjects a count of the pulse rate was made.

Averages and standard deviations for the group of subjects[1] in each of the performances are presented in Table 1. In Table 2 the differences between performances under the several conditions are shown. In each case the difference is given

[1] Data on these subjects were collected by Kathleen Sims, R. R. Simmons, and C. L. Curtis.

TABLE I

Averages and Standard Deviations of Scores Made by Subjects in Aspirin, Control, and Normal Conditions

	NORMAL		CONTROL		DRUG	
	AVE.	S.D.	AVE.	S.D.	AVE.	S.D.
Steadiness (contacts per minute)	96.8	30.9	101.2	48.6	100.3	40.2
Reaction Time (ms)	163.7	37.1	154.2	30.2	156.3	33.3
Addition						
Columns	68.6	19.4	80.1	55.5	72.1	23.2
Errors	1.9	2.0	2.0	2.2	1.9	1.7
Opposites						
Time	5:55	2:34	5:20	1:53	5:12	3:14
Errors	4.8	5.0	3.2	3.5	3.4	4.1
Code						
Time	6:12	2:57	5:55	1:52	5:58	1:09
Errors	.5	1.1	.33	1.0	.9	1.4
Pulse	81.3	10.5	77.9	8.9	80.6	8.6

the sign which results from performing the subtraction in the direction indicated in the column heading, so that an improvement would sometimes be indicated by a plus sign and sometimes by a minus, depending on the nature of the measure concerned. The correlations are uncorrected rank order coefficients. These correlations were taken into account in computing the standard errors of the differences. In one case, that of errors in code translation, so many tie ranks obtained that such a correlation is unsatisfactory, and was not computed. In arriving at the standard error of the difference as shown in Table 2 a correlation of .70 was assumed.

A survey of Table 2 shows reliable differences only in errors in code translation and in errors in giving opposites test. For code translation errors the assumed correlation is, of course, rather high, and if even a slightly lower one is assumed the reliability of the largest difference here falls below the conventional standard. The differences in number of errors on the opposites test are more puzzling, since there seems to be no

TABLE II

Differences between Scores in Three Experimental Conditions, Correlations of Scores, and Reliabilities of Differences

PERFORMANCE	CONTROL-NORMAL	DRUG-NORMAL	DRUG-CONTROL
Code Steadiness			
Diff.	4.4	3.5	−.9
ρ	.65	.58	.73
$\frac{D}{\sigma D}$	.5	.4	.1
Reaction Time (ms)			
Diff.	−9.5	−7.4	2.1
ρ	.75	.80	.83
$\frac{D}{\sigma D}$	2.3	2.0	.6
Addition Columns			
Diff.	11.5	3.5	−8.0
ρ	.70	.82	.65
$\frac{D}{\sigma D}$	1.5	1.5	1.6
Addition Errors			
Diff.	.1	0	−.1
ρ	.41	.31	.44
$\frac{D}{\sigma D}$	.02	.00	.03
Opposites Time			
Diff.	−0:35	−0:43	−0:08
ρ	.35	.49	.48
$\frac{D}{\sigma D}$	1.4	1.1	.2
Opposites Errors			
Diff.	−1.6	−.7	.9
ρ	.58	.58	.76
$\frac{D}{\sigma D}$	7.0	3.0	5.4
Code Time			
Diff.	−0:17	−0:14	0:03
ρ	.68	.80	.79
$\frac{D}{\sigma D}$	.5	.2	.3

TABLE II—(*concluded*)

PERFORMANCE	CONTROL-NORMAL	DRUG-NORMAL	DRUG-CONTROL
Code			
Errors			
Diff.	−.17	.4	.57
$\frac{D}{\sigma D}$	1.1	2.2	3.2
Pulse			
Diff.	−1.4	−.7	.7
ρ	.56	.33	.54
$\frac{D}{\sigma D}$	.7	.6	.0

reason why this function should be so much more susceptible to aspirin and to suggestion than the others studied.

A check experiment, therefore, was run on this point. The same opposites test was given to a group of 32 more university students, once a half hour after they had each taken 10 gr. of aspirin, and once a half hour after they had taken control doses of sodium bicarbonate in a similar capsule. These subjects all worked at the same time. Half of them were given aspirin on the first day, and half the control dose, the doses being reversed on the second day. Error scores only for this group were obtained. The average number of errors with aspirin was 9.94; with the control dose, 10.52. The critical ratio for this difference is .69.

It seems reasonable to conclude therefore that the difference found in this function in the original group arose from some accident of procedure. The experiment as a whole therefore indicates that a medium analgesic dosage of aspirin produces practically no effect on such mental and motor functions as here tested. It is perhaps surprising that suggestion effects do not appear in the data. This fact, however, need not be taken to indicate that no suggestion occurred, but possibly that the suggestion effect operated in different directions with different subjects. A heavier dose, such as the full therapeutic, would in all probability produce a depressant effect on performance; evidently the ordinary dose is not effective in changing performance one way or the other.

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THE PREVALENCE OF BELIEF IN FORTUNE TELLING AMONG COLLEGE STUDENTS

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SUPERSTITION as an element of character has been extolled in novels, mythologies and folk lore. Indeed, among the colored race, superstitions of varying degree play an important part in motivating their behavior. It is undoubtedly on a false premise that the layman believes superstition to be wiped out in its entirety by those who possess a high degree of intelligence.

Superstition as a psychological study still merits considerable investigation. The educational implications of a study in this particular field may best be revealed by the following citation concerning the prevailing existence of fortune tellers and the infamous and culpable circumstances provoked by their operations.

"They catch about 30,000,000 a year, and take $125,000,000 away from them; in return for this comfortable livelihood they ruin many of their victims, cause the suicide of others, even drive some of them insane."[1]

Studies of existing superstitions among classes of people have been carried on extensively. The majority of such studies have generally attempted to cover superstitions in general as well as moralistic beliefs. In this study the authors have confined themselves to the investigation of belief in fortune telling—the scope of which is indicated by the following lines of inquiry.

(1) The prevalence of belief in spiritualism, astrology palmistry, phrenology, tea and coffee grounds, cards and other forms of divination.

(2) The number of persons in either sex who have been influenced by fortune tellers.

(3) The credulity (or gullibility) of people in regard to fortune telling.

[1] Proskauer, J. J. Spook Crooks. P. 9.

(4) The classification of types of fortune telling in the order of popularity among college students.

(5) The relative effect of frequency of visits upon belief in fortune telling.

The questionnaire method of investigation was used in this study which was recently conducted with 101 college students in psychology classes at the University of Cincinnati. The following is the list of questions used in the questionnaire.

State sex *Check*

I. Have you ever visited a fortune teller? Yes. No.
What kind? Check. How often?
Spiritualist
Palmist
Phrenologist
Tea and coffee grounds
Cards
Any other, state kind.
Have you ever had your Horoscope read? Yes. No.

II. Did mere curiosity prompt your visit?

III. Did you find anything you were told to be true? in the past, present, or future?

IV. Did this truth deal with your character, actions, plans, decisions or any other phase of your life?

V. Were you ever guided by advice of a fortune-teller whether you believed it or not? If so, pertaining to what phase of your life or activity?

VI. Do you believe in any sort of fortune-telling? Yes. No. Are you absolutely prejudiced or do you think there might be something to it?

VII. Have you studied any phase of fortune-telling enough to base your opinion? If so, what phase?

VIII. Do you feel that fortune-telling in any style is just "bunk" or might be worth looking into?

IX. Do your church principles determine your views on fortune-telling? Yes. No.

X. If willing, give some of your experiences and opinions on this topic in detail, using back of questionnaire.

In answering the above questions please be frank as you need not sign your name and this information will prove valuable in research work.

Please return this copy, filled out as fully as possible.

It will be noted that the individuals were not required to place their names upon the questionnaire, and strenuous effort

was made by diverse means to see that the individual lost his identity in this investigation.

The results of this investigation are compiled below:

TOTAL NO.	MIGHT BE WORTH LOOKING INTO	BUNK	BELIEF IN SOME SORT OF FORTUNE TELLING	CHURCH PREJUDICE	GUIDED BY FORTUNE TELLERS	THINGS THAT CAME TRUE
			Women Who Had Not Visited Fortune Tellers			
16	10	6	3	1	0	0
			Women Who Had Visited Fortune Tellers			
37	20	17	7	9	0	25

Ranking Preference of Women for Type of Fortune Teller as Evidenced by Number of Visits

Cards	30
Palmist	26
Tea and coffee grounds	15
Astrologist	12
Spiritualist	10
Phrenologist	4
Slate Writer	1
	98

Influence of Frequency of Visits to Fortune Tellers on Belief

NUMBER OF WOMEN	NUMBER OF VISITS OF EACH WOMAN TO FORTUNE TELLERS	NUMBER OF WOMEN WHO EXPRESSED A BELIEF IN FORTUNE TELLING
5	1	1
17	2	3
6	3	2
4	4	0
5	5	1

TOTAL NO.	MIGHT BE WORTH LOOKING INTO	BUNK	BELIEF IN SOME SORT OF FORTUNE TELLING	CHURCH PREJUDICE	GUIDED BY FORTUNE TELLERS	THINGS THAT CAME TRUE
			Men Who Had Not Visited Fortune Tellers			
28	13	15	3	4	0	0
			Men Who Had Visited Fortune Tellers			
20	12	8	8	0	2	15

Ranking Preference of Men for Type of Fortune Tellers as Evidenced by Number of Visits

Palmist	13
Cards	11
Spiritualist	7
Tea and coffee grounds	5
Astrology	2
Phrenology	2
Crystal	1
	41

Influence of Frequency of Visits to Fortune Tellers on Belief

NUMBER OF MEN	NUMBER OF VISITS OF EACH MAN TO FORTUNE TELLERS	NUMBER OF MEN WHO EXPRESSED A BELIEF IN FORTUNE TELLING
6	1	1
9	2	2
3	3	3
2	4	2

The results obtained in this study seem to vary somewhat from those obtained in similar studies.

Lundeen and Caldwell in "A Study of Unfounded Beliefs Among High School Seniors" make the following statement when comparing superstitious beliefs of high school students with those of college students:

"College women have heard, believe in, and are influenced by a greater number of unfounded beliefs than are college men."[2]

Dudycha, in a study of "The Moral and Popular Beliefs of College Freshmen,"[3] concludes that women are more gullible in regard to superstitions than are men and that telepathy and phrenology had many adherents.

In the present study the authors found that 18.90 per cent of the women who had visited fortune tellers expressed a belief

[2] Lundeen, G. E. and Caldwell, O. W. A Study of Unfounded Beliefs Among High School Seniors. *Journal Educational Research.* Nov., 1930. P. 272. Vol. 22.

[3] Dudycha, C. J. The Moral and Popular Beliefs of College Freshmen. *School and Society.* Vol. 32. Pp. 69–72.

in fortune telling, in direct contrast to 40 per cent among the men in this same classification.

Of the women who had visited fortune tellers 54.05 per cent deemed "it might be worth looking into," whereas 60 per cent of the men in this group affirmed this belief.

Only two men who had visited fortune tellers claimed that their conduct had been guided at times by them, in contrast to the fact that no women acknowledged a similar influence.

A cursory glance at the particular type of divination preferred by men indicates that palmistry, cards, spiritualism, tea and coffee grounds readers, astrology and phrenology are favored in the order named. Among the women the seers preferred in their respective order are card prophets, palmists, tea and coffee grounds diviners, astrologists, spiritualists, and phrenologists.

If the criterion for belief was established on the basis of visits paid to fortune tellers, the women's averages would have far exceeded those of the men, the average visits for women being 2.65 while the average number of men's visits was but 2.05.

It would not be an idle conjecture to state that we would expect the number of repetitive visits to fortune tellers to be closely allied with a belief in such, the individual being in a more suggestible state after each visit. On this assumed basis the men run true to form, but peculiarly enough the women almost reverse the expected outcome. However, it might be pointed out that women are more readily influenced by social compulsions and hence checked their beliefs on the questionnaire with an unconscious factor playing an important rôle. Support for this statement might be gathered from the fact that among the men in both groups, but 8.33 per cent of them were influenced against fortune telling by religious principles while 18.86 per cent of the women in both groups were so influenced.

It would seem from the results obtained in this study that superstition is not to be treated solely as a primitive element of character but as one to be found in all strata of life, a difference of degree rather than of kind.

A NOTE CONCERNING THE EXAMINATION OF TRAFFIC OFFENDERS[1]

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THE increasing number of automobile accidents has been an increasing source of concern to the citizenry, the administrators of our traffic laws and to the automobile manufacturers. For the first time in the history of civilization, an object which in itself advances security and heightens the pleasure of the population as a whole, has proved itself to be a marked menace. In the case of firearms this is not true. While security was increased by the invention of gunpowder and some persons acquired pleasure through its use, nevertheless, firearms in themselves were more harmful than harmless. The automobile, however, is primarily an instrument for good. Rather than curtailing its activity, socially minded scientists and others are interested in expanding its use, while cutting down its harmful effects.

The causes for the increasing number of traffic accidents have been variously explained and many different approaches to the problem have been and are being made. We find first the engineering approach with its attention to dangerous highway conditions due to poor lighting, paving, banking of curves as well as structural weaknesses of the automobile itself. Much work has been done and no expense spared to remedy these engineering defects wherever and whenever they might be discovered.

Secondly, we find the problem of law enforcement. This problem is being attacked on many fronts at the present time and nationally uniform traffic codes are being advocated. States and municipalities are urging, and many have adopted central bureaus for the purpose of gathering and classifying records of habitual offenders. More states are daily being

[1] From the Traffic Division, Psychopathic Clinic of the Recorder's Court, Detroit, Michigan. L. S. Selling, Director, P. 2.

added to the list of those requiring the licensing of all drivers, while others are considering the more rigid examination of applicants for driver's licenses.

The educational approach has not been neglected since various motor vehicle associations, particularly the automobile groups affiliated with the A.A.A. have gone to enormous expense in teaching safety. These programs have been planned for the instruction of children of school age. Much printed matter has been distributed by these agencies, lecturers have disseminated valuable information, trophies, medals and other insignia have been offered for meritorious or heroic work. Safety patrols have been organized and equipped. Every effort has been made to awaken in the children, traffic consciousness. Paralleling the activity as outlined above, school authorities have not only cooperated fully with all these activities but have more recently included in their curricula, courses in traffic regulations and traffic safety.

We shall next consider the psychological approach to this problem. In 1935 Doctor Myers, Principal of the National Institute of Industrial Psychology in England, presented a paper before the Insurance Institute at London (1), pointing out the following facts: First of all, the data so far as accidents are concerned, which we are able to elicit by the use of statistical methods, are practically valueless. This is true because the data have been collected and treated without care in framing the questions, and because the usual simple precautions which would ordinarily be taken by the trained psychologist were neglected. Doctor Myers further pointed out that psychologists were seldom consulted in the matter of arrangements of levers and other elements of safety which have psychological significance. He contended that freedom from gross bodily disability, a knowledge of traffic regulations and signals, and ability to properly manipulate the mechanical factors of cars, are the usual means of determining whether a person is fit to drive, and in themselves are not sufficient to protect the public as a whole.

The National Institute for Industrial Psychology in London

has devised a number of experimental procedures which are useful in testing the automobile driver (2), and it has been their experience that the use of these examinations really does eliminate some of the worst drivers. It was proposed by this institute that all drivers in the British Isles be subjected to these psychological tests.

Further studies, both by Lauer at Ohio State University (3) and later by De Silva at Massachusetts State College (4), have tended to confirm the British findings. Both Lauer and De Silva have constructed elaborate apparatus for the purpose of measuring such factors as reaction time, judgment of speed and distance, tunnel vision, glare blindness and many others. The development of apparatus now available for the measurement of these various psychological factors was necessarily preceded by intensive research.

The present writer while not advising, as our British friends suggest, the universal examination of all drivers, and not contending that these psychological tests of themselves offer a complete answer to the traffic problem, still does feel that the "human factor" has been too long neglected.

The Psychopathic Clinic of the Recorder's Court, Detroit, Michigan, has for some time been examining traffic offenders referred by the Judges of the Traffic and Ordinance Division of the Court. There has recently been a marked increase in the number of offenders referred to the Clinic for examination. This is true, first, because of the fact that the traffic problem is becoming more acute each day, and, secondly, because the value of physical and psychiatric examinations in certain cases has been definitely demonstrated.

With regard to the physical examinations, we find that certain individuals are suffering from diseases, such as epilepsy, which render them unfit to operate a motor vehicle. Others because of some skeletal impairment, such as a deformity or paralysis, which might render the use of their limbs ineffectual at a critical moment, are in many cases a menace.

The psychiatric examination is important for the reason that it incorporates the physical findings and adds to them a study

of the emotional reactions of the individual. The psychiatrist attempts to discover why the individual is contemptuous of the law and what there is in his emotional make-up and his attitude toward society which causes him to conduct himself in such a way that he becomes involved in an accident.

A 22-year-old man, who had been given an unbelievably large number of traffic tickets, was recently referred to the Clinic for examination by the trial Judge, and we quote an extract from the report of our examination made at that time:

> "He is aggressively and almost viciously antisocial as far as the use of a car is concerned. He admits quite frankly that he will flaunt and ignore the law when he so desires. He is a foolish and inveterate liar, even though he knows the correct information must already be in our hands. His promises are worthless and his statements almost as bad. We find that he has been prevaricating to the Court about facts in his background and when we caught him attempting to do this during the examination, he laughed lightly as though the matter were of no importance."

In the case of another individual, 46 years of age, who had been arrested twice in the same evening for speeding and who was also referred to the Clinic for examination, we reported in part as follows:

> "Psychiatrically, we find him to be suffering from a mild form of mental disease known as manic depressive psychosis. The form which he exhibits is mild and probably does not cause him to do anything more dangerous than the impulsive speeding for which he was arrested. However, he is distractable and restless and should have care from a private psychiatrist or should be hospitalized for observation."

The above cases, and we could quote from many others, indicate very definitely the value of psychiatric examinations for certain offenders. The value of physical examinations is, of course, fairly obvious and we might say again that in connection with the matter of epilepsy we have discovered that certain violators were suffering from this disease.

The writer has recently proposed that the present functions of the Clinic be expanded to the extent that certain of the previously described psychological tests might be incorporated in our regular clinical examination. Under the proposed arrangement a separate division of the Clinic would be organized and would confine its activities solely to the examination of the so-called "accident prone" driver. Certain pieces of psychological apparatus would either be purchased or constructed. The cost of such a program would be relatively small inasmuch as the physical and psychiatric services previously mentioned are already available and would require no added expenditure.

It is planned that this proposed activity be placed in the hands of a competent psychologist qualified by both training and experience to conduct these examinations. This individual is, at the present time, employed in the Clinic and was formerly in charge of selection tests for the Cleveland Railway Company, Cleveland, Ohio. While engaged in this activity, he was responsible for the testing and selection of applicants for the positions of bus driver and street car motorman. "Accident prone" car and coach operators were examined on various pieces of psychological testing apparatus similar to those devised by Doctor Viteles, of the University of Pennsylvania, for the Milwaukee Electric Power and Light Company (5).

In short, the writer feels that the present activity of the Psychopathic Clinic of the Recorder's Court in the examination of traffic offenders is of definite value to the community. Certain psychological factors, however, cannot be investigated without the addition of scientific equipment. As has been pointed out the need for such thorough investigation is obvious. Much research work has been done on the standardization of equipment. The equipment has been devised and is now available and an individual trained and experienced in the use of such equipment is now a member of our staff. That the establishment of such a well-rounded examination program would be of definite therapeutic value cannot be denied. On the one hand the driver with minor psychological handicaps, such as

visual defects, difficulties of perception, and others, could be advised as to proper corrective treatment and would therefore become less dangerous, while the driver who could not be salvaged would be removed from the streets. These two services should more than justify the slight expenditure necessary to supplement the present inadequate examination program and might well serve to save many lives and inhibit much destruction of property.

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A COMPARISON OF THE INTELLIGENCE QUOTIENTS OF INCARCERATED DELINQUENT WHITE AND AMERICAN NEGRO BOYS AND OF GROUPS OF ST. LOUIS PUBLIC SCHOOL BOYS[1]

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THE intelligence of delinquent boys, incarcerated and at large, has been the subject of numerous studies. The number of those dealing specifically with the incarcerated delinquent negro boy is small, whereas, on the contrary there has been a plethora of studies on the public school negro boy.

Miner (1918), Freeman (1926) and, more recently, Pintner (1931) have made comprehensive reviews of the studies of the intelligence of white delinquents. Miner reinterpreting the results given by other investigators finds that between 6 and 30 per cent of boys in reform schools are deficient mentally. He found that institutions which cared for the same type of delinquents showed pronounced variations in the amount of tested deficiency. Miner did not believe that this difference was explained by errors in testing, but by a significant difference between the care of the mentally deficient in the different states. Freeman from his review concludes:

> "The earlier studies, both by means of mental tests and by estimates of intelligence, indicated that there is a large percentage of mental defectives among delinquents or criminals, and that there is a large percentage of criminals among mental defectives. The estimate of these percentages varied widely, but it was usually large. The later studies have resulted in a gradually diminishing estimate of the percentages of defectives among delinquents."

[1] The author wishes to acknowledge aid given to this investigation by the Rockefeller Foundation.

The per cent of feeblemindedness of delinquents ranged from 7 to 93, median, 30, in the 41 investigations listed by Pintner, the earlier studies showing the largest per cent. The average IQ in the more recent studies, reviewed by Pintner, ranges between 78 and 90. Although investigators generally have tended to lower the borderline between clearly normal and retarded intellect, the majority have found delinquents to be deficient mentally. Wide differences of opinion obtain as to the per cent of feeblemindedness among inmates of training schools. Ordahl (1916) found 11 per cent of the boys in the St. Charles School for boys to be presumably deficient and an additional 20 per cent to be doubtfully deficient. Kelley (1917) estimated that 20 per cent of the inmates in the Texas State Juvenile Training School should be in a school for the feebleminded. Boynton (1926) concluded that about 15 per cent of the twelve-year-old white boys in the Kentucky Houses of Reform were feebleminded. A reasonable estimate of feeblemindedness among incarcerated delinquent boys would be between 10 and 20 per cent.

Although many different intelligence tests have been employed in an attempt to measure the intelligence of the American negro, none of the methods has met with complete approval of psychologists. In a recent number of *The Journal of Negro Education* (July, 1934) devoted entirely to a discussion of "The Physical and Mental Abilities of the American Negro," Price (1934) made an exhaustive review of the literature concerning negro-white differences in general intelligence. The purpose of his article was: "to support and defend the thesis that: up to the present there has been no adequate comprehensive measurement of the intelligence of the Negro." Price's chief objections to the methods heretofore used were that the tests had been standardized on whites and that the results obtained had been interpreted on the assumption that differences were due to race in the biological sense, rather than to environmental and developmental factors. However, Pintner (1934) in the same journal comes to the following conclusion:

> "So far as intelligence testing is concerned, we have a great number of studies comparing Negroes and whites. Most of these show the Negro inferior to the white, regardless of what type of intelligence test is used. . . . Because almost all the evidence points in one direction regardless of the test used, or of the age group studied, it would look as if the intelligence of the Negroes may turn out to be somewhat below that of the whites. How much below, we have no idea at present. We do know from our present results that the overlap is at least 25 per cent and in all probability more."

Recent investigations of the intelligence of American negro boys, both delinquent and non-delinquent, have been made by Daniel (1932) and Beckham (1933). Daniel, although not interested primarily in the intelligence of three groups of negro boys he studied, gives the results obtained from The Haggerty Intelligence Examination, Delta II. The mean mental age for the delinquent group (100 boys) was 10–4, for the problem boys (80) 10–5, and for the non-problem (120) 10–7. The mean chronological age for the delinquent group was much higher than for the other groups so that the mean IQ for delinquents was 74.8, for the problem boys 86.4, and for the non-problem group 93.6. The basal age was 14, and as 69 per cent of the delinquent boys were more than 14–0, use of that figure as the basal age give the majority of them higher IQ's than would have been obtained by the use of their respective chronological ages. Beckham (1933) in studying the intelligence of colored adolescents in metropolitan areas included a group of 100 delinquent boys incarcerated in the Blue Plains Industrial School, Washington, D. C., tested with the Terman Revision of the Binet-Simon test. He summarizes the results of the delinquent group as follows:

> "The mean IQ of the delinquents (86.00) is below the mean IQ of all other groups. There is a considerable difference between the general distribution of IQ's and the mean IQ of the delinquents. There are 11 points difference between the mean of the Washington group (97.25) and that of this group. The Baltimore group (95.74) averages 10 points above them, and the New York group (104.70), 19 points above."

The present report is derived from data obtained by the use of the Kuhlmann-Anderson Intelligence Tests in the course of an investigation to determine the status of the mental and physical development of incarcerated delinquent white and negro boys and of groups of St. Louis school boys. Four reform schools were visited, namely: Misouri Reform School, Boonville, Mo., Bellfountain Farms, St. Louis, Mo., St. Charles School for Boys, St. Charles, Ill., and the Kentucky Houses of Reform, Greendale, Ky. Each of these schools admits white and negro boys between the ages of 8 and 18 years who have been sentenced by Juvenile Courts. The nature of the crimes for which the delinquent boys were committed may be found in Table III. The groups of public school boys are composed of boys between the ages of 12 and 16 years who attended one of the public grade or high schools in St. Louis. An effort was made to obtain about an equal number of each age group from schools in different parts of the city.[2,3,4]

The results from this study of the mental and physical development of reform and public school boys have been divided into two parts, the physical and the mental. The latter are presented here and the former are being completed for publication.

Groups of from ten to twenty boys between the ages of twelve and sixteen years were tested by the Kuhlmann-Anderson methods after the anthropometric measurements had been completed on all the subjects in any given school. The test battery used was determined by the ages and school grades of the individuals composing the groups. The tests were later

[2] The author wishes to express his appreciation to the directors and members of the staffs of the various reform schools visited for their permission to carry on the investigation and for the cooperation received while doing so.

[3] To Dr. Henry J. Gerling, Superintendent of Instruction of the Public Schools of St. Louis, the author is indebted for the permission to examine the public school boys. To the principals and teachers of the various schools and to the boys who acted as subjects he owes his sincere thanks.

[4] In the selection of the public school boys schools were sought in which the social environment of the white and negro boys did not depart sharply from each other; and only typical subjects were chosen.

scored and the mental ages and IQ's determined. As to the reliability of these tests the reader is referred to a previous article, Charles (1933), in which the results obtained by the Kuhlmann-Anderson Intelligence Tests, Otis Group Test and the Stanford Revision of the Binet-Simon Tests were compared.

A total of 872 boys was examined; of this number 352 were white and 176 negro reform school boys, with an almost equal number, 172 of white, and 172 of negro public school boys.

In Table I the number of boys in each year group is given together with the mean chronological age, mental age, IQ, and differences between the white and negro groups. It will be

TABLE I

Comparative Table of Public and Reform School Boys

WHITE					
Public School			Reform School		
Chronological Age					
Age	No.	Mean	No.	Mean	Diff.$_{P.E.}$
12	(31)	144.66	(32)	143.06	1.60 ± .56
13	(30)	154.37	(54)	157.57	3.20 ± .48
14	(34)	167.00	(75)	168.69	1.69 ± .53
15	(31)	180.56	(97)	179.89	0.67 ± .51
16	(46)	192.39	(94)	191.34	1.05 ± .40
Mental Age					
12	(31)	146.69	(32)	120.62	26.07 ± 3.00
13	(30)	155.10	(54)	119.72	35.38 ± 2.39
14	(34)	158.85	(75)	127.70	31.15 ± 2.44
15	(31)	165.85	(97)	137.41	28.44 ± 3.06
16	(46)	189.28	(94)	141.90	47.38 ± 3.39
Intelligence Quotient					
12	(31)	101.84	(32)	84.97	16.87 ± 2.07
13	(30)	100.83	(54)	76.91	23.92 ± 1.49
14	(34)	95.38	(75)	76.07	19.31 ± 1.49
15	(31)	92.00	(97)	76.70	15.30 ± 1.67
16	(46)	97.00	(94)	73.61	23.39 ± 1.72
All	(172)	98.31	(352)	76.74	21.57 ± .79
NEGRO					
Chronological Age					
12	(28)	143.79	(19)	144.55	.76 ± .63
13	(32)	156.28	(22)	156.63	.35 ± .66
14	(38)	168.08	(38)	167.95	.13 ± .47
15	(38)	179.87	(44)	180.68	.81 ± .54
16	(36)	191.86	(53)	192.14	.28 ± .53

			Mental Age		
12	(28)	137.71	(19)	108.92	28.79 ± 2.28
13	(32)	150.12	(22)	111.05	39.07 ± 2.53
14	(38)	152.18	(38)	118.55	33.63 ± 2.41
15	(38)	148.08	(44)	122.50	25.58 ± 2.25
16	(36)	151.33	(53)	131.56	19.77 ± 3.18
			Intelligence Quotient		
12	(28)	95.39	(19)	75.42	19.97 ± 1.60
13	(32)	97.31	(22)	71.55	25.76 ± 1.59
14	(38)	91.08	(38)	71.21	19.87 ± 1.45
15	(38)	82.79	(44)	67.11	15.68 ± 1.28
16	(36)	79.50	(53)	68.70	10.80 ± 1.67
All	(172)	88.60	(176)	70.18	18.42 ± 0.78

noted that in only one instance is the difference between the mean chronological age of any age group as much as 2 months, that is in the 13-year-old white groups. However, in comparing any other two groups of the same age either as to race, incarceration or non-incarceration the differences are not more than two months in any instance.

In every age group there is a marked difference in the mental ages of the public and reform school groups. In the white boys this is smallest at 12 years of age and largest at 16 years. In the colored groups the difference is greatest in the thirteenth year and least in the sixteenth year.

In considering the mean IQ's attention is called to the general decrease from the twelfth to sixteenth years in every group, with two exceptions. The most noticeable exception being that of the white public school boys in which there is a sharp increase of 5 IQ points of the 16- over the 15-year-old group. The other exception is to be noted in the negro public school group; here the 13-year-old boys have a mean IQ two points above that of the 12-year-old boys. It appears, therefore, that the intelligence of this group of boys studied decreases with increasing age. This decrease is to be expected since it has been known for some time that, for tests that give correct mental ages at all mental levels, intelligence quotients below 1.00 tend to decrease, and above 1.00 they tend to increase as the age of the group increases.

Comparing the reform and public school groups one notes

that the mean IQ of the entire white public school group is 22 IQ points above the white reform school group. The smallest difference being 15 IQ points at 15 years; whereas, at 13 and 16 years the difference is 23 and 24 points, respectively. An average difference of 18 IQ points exists between the negro public and reform school groups. The smallest difference is 11 points at 16 years and the largest 26 points at 13 years. In every age group the reform school boys differ significantly from the public school boys of the same age and race, and in all but one instance the difference is 15 IQ points or more in favor of the public school boys.

Differences in the mean IQ's of whites and negroes of the same social status and age are much less than between the public and reform school groups of the same race. The mean difference between the public school white and negro boys is 10 IQ points in favor of the white boys; this difference, however, is due chiefly to the differences at the fifteenth and sixteenth years (10 and 17.5, respectively) as the difference is only 6.5, 3.5, and 4.3 for the twelfth, thirteenth, and fourteenth years respectively. The mean difference is even less between the white and negro reform school boys, 6.5 IQ points; the differences being 9.5, 5.4, 4.8, 9.6, and 4.9 from 12 to 16 years. It appears, therefore, that there is a small but consistent superiority of the white boys over the negro boys. Whether this difference is due to inherent factors, to training or environment, or to possible deficiencies in the test employed or to a combination of these factors cannot be determined at present.

The rank order in intelligence of the four groups studied as shown by the results of the Kuhlmann-Anderson Intelligence Test is: first, the white St. Louis Public School boys, next the negroes in the public schools, then the white boys in the reform schools, and lastly the delinquent negro boys. This test establishes that the mental development of the white public school boys is far superior to that of the white reform school boys, and that the negro public school boys are likewise far superior to the negro boys in reform schools. Whether or not this condition also holds for the physical development of this group

will be shown by the anthropological measurements, the results of which are nearing completion.

TABLE II

Distribution of Intelligence Quotients of White and Negro Boys

I.Q.	WHITE				NEGRO			
	Reform		Public		Reform		Public	
	No.	*Per Cent*	*No.*	*Per Cent*	*No.*	*Per Cent*	*No.*	*Per Cent*
135–139			1	.58				
130–134			1	.58				
125–129			3	1.74				
120–124			2	1.16				
115–119			8	4.65				
110–114	1	.28	12	6.98			3	1.74
105–109	4	1.14	23	13.37			7	4.07
100–104	11	3.12	24	13.95			18	10.47
95– 99	11	3.12	26	15.12	1	.57	28	16.28
90– 94	32	9.09	28	16.28	3	1.70	30	17.44
85– 89	44	12.50	20	11.63	17	9.66	26	15.12
80– 84	47	13.35	16	9.30	15	8.52	22	12.79
75– 79	50	14.20	3	1.74	20	11.36	19	11.05
70– 74	48	13.64	3	1.74	36	20.45	13	7.56
65– 69	36	10.23	1	.58	24	13.64	3	1.74
60– 64	31	8.81	1	.58	36	20.45	1	.58
55– 59	22	6.25			12	6.82	2	1.16
50– 54	12	3.41			10	5.68		
45– 49	3	.85			2	1.14		
Total	352	99.99	172	99.98	176	99.99	172	100.00
Means	76.74 ± .47		98.31 ± .63		70.18 ± .53		88.60 ± .57	
S.D.	13.00 ± .33		12.25 ± .45		10.45 ± .38		11.00 ± .40	
Coef. of V.	16.94 ± .43		12.46 ± .45		14.89 ± .54		12.42 ± .45	

The distribution of the IQ's is given for each group in Table II; figure 1 shows these data graphically. There is not a single case of an IQ reaching 140 (highest 135) in the entire group, none of the negro boys or white reform school boys reaches as high as 115, and none of the negro reform school boys reaches 100. Considering the other extreme we find that 29.55 per cent of the white reform school boys have IQ's below 70 as compared with 1.16 per cent of white public school boys; and 47.73 per cent of negro reform school boys have IQ's below 70 in contrast to but 3.48 per cent of public school negroes. If we were to follow some investigators this entire group would

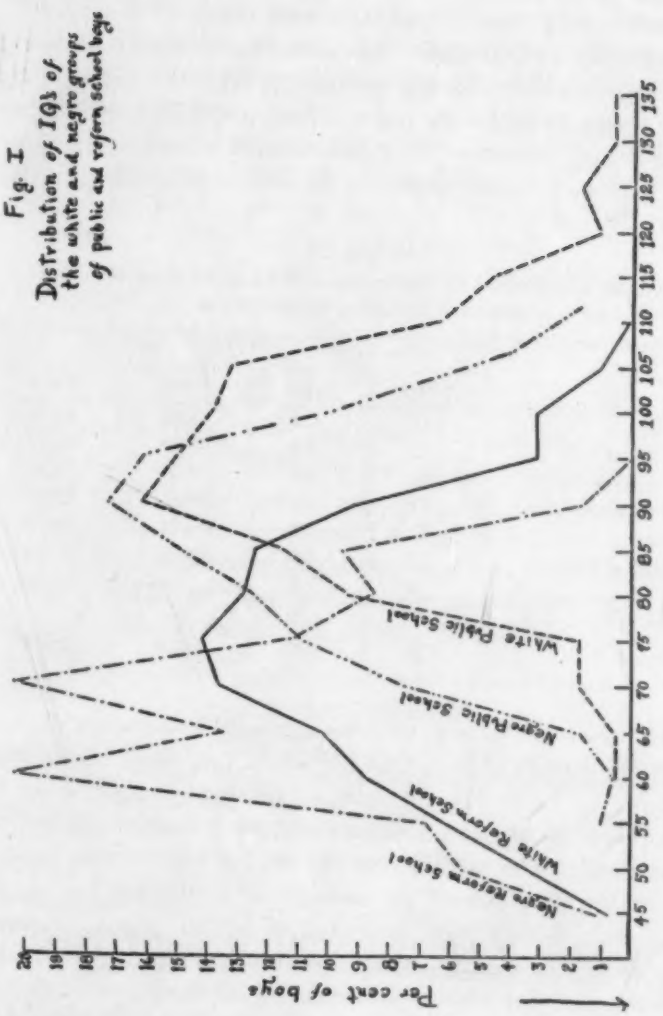

Fig. I
Distribution of IQs of the white and negro groups of public and reform school boys

be classed as feebleminded. However, probably a more accurate and certainly a more conservative classification would be to consider only those whose IQ's were below 60 to be feebleminded. By this criterion the percentages would then be: 10.51 for the white reform school group, 0 for the white public school group, 13.64 for the negro reform and 1.16 for the negro public school groups. These percentages compare favorably with the more recent estimates as indicated earlier in this paper.

TABLE III

Intelligence Quotients of Incarcerated Delinquent Boys Compared with the Nature of Their Crimes

	TOTAL NUMBER		MEAN I.Q.	
	White	Negro	White	Negro
Delinquency	111	36	76.95	66.31
Incorrigible	18	22	77.28	70.86
Petty Larceny	62	45	74.26	70.99
Grand Larceny	47	14	78.81	73.43
Burglary	52	20	74.98	68.75
Burglary & Larceny	46	25	80.91	72.20
Sex	3	5		
Unclassified	13	9		
All Crimes	352	176	76.74	70.18

The reform school boys have been divided into groups according to the nature of the crime for which they were committed, as shown in Table III. A total of 147 boys is listed only as delinquents as the exact nature of their crime could not be determined. The majority of the crimes were of the nature of some form of larceny or burglary or a combination of the two. Only 8 boys were convicted of sexual crimes, whereas 40 were sent to a reform school because of incorrigibility. In both negroes and whites the mean IQ of those convicted for grand larency or burglary and larceny was higher than for any other crime. The differences, however, between any two types of crime are not great.

Summary and Conclusions

1. The intelligence of twelve to sixteen year old boys in the public schools of St. Louis is superior to that of boys of the same age in reform schools. This superiority exists in groups of both white and American negro boys, but is most marked in the white boys.

2. The mean IQ of the white boys is slightly higher than that of the negro boys of the same social status.

3. There is a decrease in the mean IQ's from twelve to sixteen years of age in both white and negro boys.

4. The per cent of delinquent boys having an IQ of below 70 is 29.55 for the white and 47.73 for the negro. In the public schools only 1.16 per cent of the white and 3.48 per cent of the negro boys have IQ's below 70.

5. The boys who should be classified as feebleminded, that is those with IQ's below 60, comprise 10.51 per cent of the delinquent white group, 13.64 per cent of the delinquent and 1.16 per cent of the public school negro groups; whereas none of the white public school boys have IQ's below 60.

6. In both white and negro reform school boys the mean IQ of those convicted for grand larceny or burglary and larceny is higher than for any other crime. The differences, however, are small.

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THE RELATION BETWEEN AGE (CHRONOLOGICAL AND MENTAL) AND RATE OF PIANO LEARNING

ROBERTA W. BROWN

WHAT is the most economical age at which a child might begin to learn to read piano music? At what age will there be sufficient success to ensure pleasure in learning? The answers to those questions are of both practical and theoretical interest. Parents wish the child to enter in some measure, as early as possible, into those activities which form part of their culture. Psychologists wish to know something of the rate of growth of such complex perceptual-motor habits as are necessary to reading piano music. They also wish to know what are the factors which make up "piano ability" and also the nature of the learning process.

The study presented here, which is a report of the learning in the first ten lessons only, is part of a larger study in piano learning and the gathering of the data was incidental.

The music scores which the children learned to read were all four measures long. All were in the scale of C, and all were in common time. Two voices only were presented, one in the treble clef and one in the bass clef. Thirty of these scores were used.

The scores were arranged in order of difficulty in the following manner. Thirty-three scores were first arranged in order of difficulty by the opinion of the writer who composed them. A group of five children whose average age was seven years and seven months and whose average mental age was nine years and two months learned these scores beginning with the easiest. The method of learning was described in an earlier article.[1] When all the children had learned the series the average percentage of correct renditions of each score at the first trials was

[1] A Preliminary Study of the Touch Method of Learning Piano Music. JOURNAL OF APPLIED PSYCHOLOGY, Vol. 18, No. 4, August, 1934, pp. 516–527. Roberta W. Brown.

found. It was assumed, not altogether justifiably, that the higher the average percentages, the easier the scores, and the series was rearranged largely on that basis. Three scores were omitted. One was added and one was slightly changed. The series was then ready for the new group of children.

The children used in this study learned the scores in essentially the same way as the first group had done with three modifications. First there were no R (recapitulation) exercises which were used in the previous study[2] to find out the relation between speed of playing and efficiency of performance. Second, because of the frequency of errors at the beginning of each repetition made by the first group, it was thought advisable to allow a second start if an error occurred within the first measure. Third, all children were expected to have the same length of learning period, *i.e.*, twenty minutes. However, as each score had to be played three times, the actual time consumed varied to a slight degree. Occasionally, the six-year-old children showed signs of fatigue and once or twice wished to stop playing before the time set. The learning period of the five-year-old child ranged from eight to seventeen minutes. The four-year-old child never stayed longer at the piano than ten minutes nor shorter than five minutes. He could have done no better had he stayed longer. The total time spent by each child in learning is recorded in table 1.

As in the previous study, the performance was recorded on an all-or-none basis. The total number of correct performances was regarded as a measure of the rate or speed of learning. The percentage of correct performances to the total number of trials was computed and appears in Table I.

Table I shows the chronological age and the mental age of the learners. It also shows the total time each child spent in learning, the number of times each child played the scores correctly, called "Rate of Learning," and the percentage which that number was to the total number of trials.

The learning of only seventeen children is reported in table I. Child no. 1 and child no. 2 refer to the same child. At four

[2] *Ibid.*

TABLE I

CHILD	C.A.		M.A.		TOTAL TIME OF LEARNING	RATE OF LEARNING	PERCENTAGE CORRECT
1	4yrs.	11m.	7yrs.	4m.	80min.	119	15
2	5	11	8	10	125	84	40
3	6	5	7	7	155	102	50
4	6	8	8	6	187	149	61
5	7	0	8	8	202	236	63
6	7	0	8	5	204	324	80
7	7	0	9	8	197	172	61
8	7	1	8	8	195	263	68
9	7	1	8	8	193	152	56
10	7	2	8	0	188	177	60
11	7	3	8	11	198	222	66
12	7	6	9	0	197	179	52
13	7	8	8	9	205	192	59
14	7	8	10	1	206	194	56
15	7	10	10	6	195	196	61
16	8	11	10	6	193	241	67
17	8	11	8	4	210	264	71
18	9	0	9	8	207	219	61

years and eleven months this child's hands seemed to be too weak to learn. He learned to identify two notes and to keep time to the metronome on those two notes. At the end of the year there was no memory of any previous learning. In table I there is one record of four-year-old learning, one of five, two of six, eleven of seven, two of eight, and one record of nine-year-old learning.

During the period of the learning which extended a little over three weeks at three lessons a week, practically no practicing was done at home as the children had no scores. A few children might have tried to recall what they had done during the lesson period but that is not likely to have had very much significance.

The highest scores played correctly at the first attempt of that score was arbitrarily chosen as a measure of achievement for each lesson. The average of these scores for each age group at each lesson was computed. The learning curves shown in figure 1 are plotted from these data. The nine-year-old child

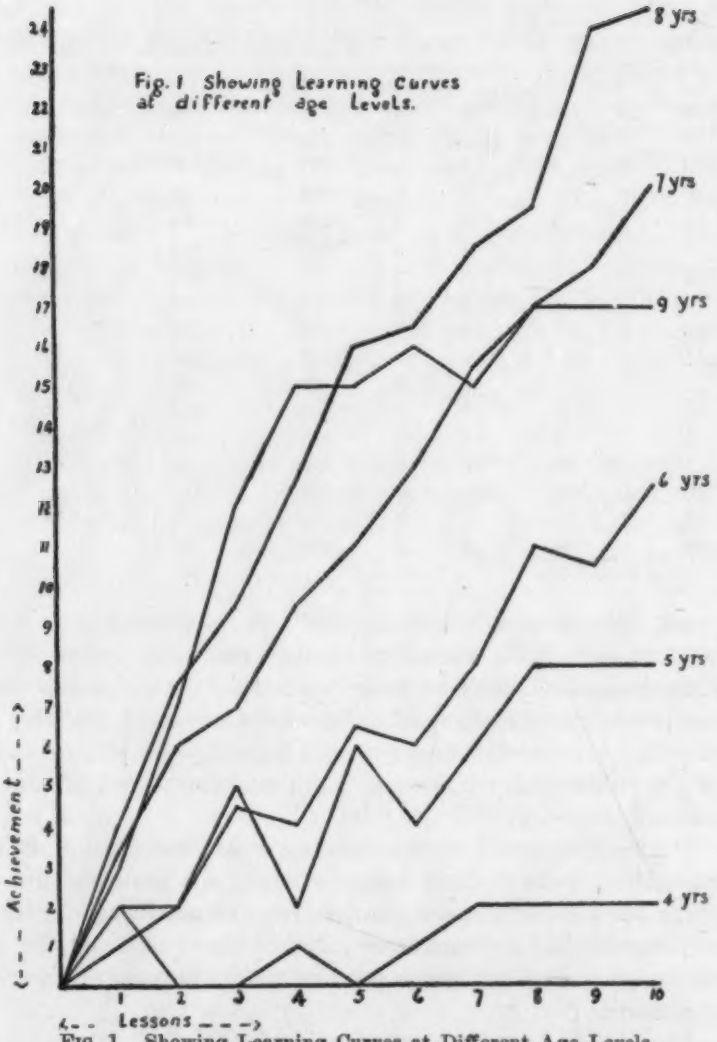

FIG. 1. Showing Learning Curves at Different Age Levels.

refused to use all his fingers in a descending passage in the fifth lesson and continued this practice beyond the tenth lesson, hence the fallen learning curve for this child.

RESULTS

There is a rank correlation of .60 between chronological age and rate of learning. There is a rank correlation of .23 between mental age and rate of learning. However, a correlation on so few cases is merely a suggestion.

INTERPRETATION OF RESULTS

For practical purposes, chronological age and the desire of the child seem to be the most useful factors in deciding when a child should start piano lessons. As in the pecking of chicks, little seems to be gained by too early a start. The critical age seems to be around seven. All children over seven played more often correctly than incorrectly, yet there was great variability within the seven-year group, the range being from 52 per cent to 80 per cent correct. It might be assumed that the more mistakes in the performance the less the enjoyment of the performer. However, because of differences in sensitivity and in kind a mistake might be more disturbing to some children than to others. A child highly sensitive to melody and harmony but with poor motility, might not enjoy piano learning. Personality and training also play their part in piano performance.

For theoretical purposes the answer is not quite so simple. It is plain that there are many more factors involved in piano learning than those encompassed by "age." Perhaps the most important factors involved in piano learning are the response to rhythm, which may be a specific factor, motor coordination, kinaesthetic sensitivity and sensitivity to melody and harmony. By the method used in this learning there was much demand made on rhythm and on motor coordination and it was in those two fields that differences in responses were most marked. Child No. 6 who played correctly 80 per cent of the time seemed to respond with her whole body to the beat of the metronome. On the other hand child No. 7 had evident difficulty in perceiving the beat. When asked to listen to the beat he often turned his head to see the metronome pendulum swing. Child No. 8 had the same chronological and mental age as child No.

9 yet there semed to be a marked difference in their motor coordination. Child No. 12 was generally regarded as a musical child yet his playing was only 52 per cent correct. He sang well but he did not play well.

CONCLUSIONS

Some means of finding the "piano quotient" of each pupil before learning begins should be of great value to both pupil and teacher. The teacher should be able to adjust the increments of difficulty to the ability of the pupil so that pleasure in learning, following success, might be maintained throughout. A test of general musical ability is not sufficient because of the large "motor" ingredient in piano learning. Musical children need to be guided in the selection of an instrument.

NEWS AND NOTES

Correction to "Note on a Transformation Function for Proportions and Percentages"[1]

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Professor Harold A. Edgerton has called my attention to an error which occurred in Table III of my article. The corrected table is given herewith. The difference between the obtained and expected frequencies yields a value of χ^2 equal to 14.66 which for 12 degrees of freedom (2 degrees of freedom being lost in the computation of the mean and of the standard deviation from the data) can arise by chance 30 times in 100. This is a much better fit than was obtained before. Apparently the discrepancy between the T method and the P method is no greater than would be expected by chance.

TABLE III

Difference between Critical Ratios Computed by the Two Methods

DIFFERENCE	OBTAINED	EXPECTED	χ^2
0.40 : 0.44	1		
0.35 : 0.39	4	2.7	4.03
0.30 : 0.34	1		
0.25 : 0.29	2	4.2	1.15
0.20 : 0.24	6	8.9	0.79
0.15 : 0.19	10	14.9	1.61
0.10 : 0.14	20	23.3	0.47
0.05 : 0.09	36	30.7	0.92
0.00 : 0.04	37	35.8	0.04
−0.05 : −0.01	47	−35.5	3.73
−0.10 : −0.06	25	30.7	1.06
−0.15 : −0.11	23	23.3	0.00
−0.20 : −0.16	12	14.9	0.56
−0.25 : −0.21	10	8.7	0.19
−0.30 : −0.26	4	4.2	0.01
−0.35 : −0.31	1	2.5	0.10
−0.40 : −0.36	1		
Total	240	240.0	14.66

M = 0.0002.
σ = 0.1307.

[1] This journal vol. *19*, no. 2, pp. 213–220.

The announcement has just come to the JOURNAL OF APPLIED PSYCHOLOGY that after August 15, 1936, the address of the Editorial Office of *Psychological Abstracts* will be as follows: *Psychological Abstracts*, Brown University, Providence, Rhode Island, Walter S. Hunter and Raymond R. Willoughby, Editors.

New methods of adding interest and effectiveness to high school education by means of theatrical films were demonstrated for the first time as one of the highlights of the annual convention of the Department of Secondary Education of the National Education Association at Portland, Oregon, on July 1, 1936. For purposes of discussion the Department presented to a group of forty high school pupils an educational preview of a new screen biography of Shakespeare, including the balcony scene from "Romeo and Juliet," one issue of "The March of Time," and a film of the photoplay, "The Face of Britain." Dr. William Lewin, of Newark, N. J., and Miss Fannie L. Barber, teacher of photoplay appreciation in the Washington High School at Portland, led the students in the discussion. Dr. Newin in discussing the new development said, "The use of the photoplay, like the use of the newspaper, the magazine, and radio in the classroom, provides a powerful means to the ends we seek in education. . . . More than three thousand high schools discuss the issues of 'March of Time' in conjunction with newspapers."

The following news items come from Stanford University: Dr. A. A. Campbell, formerly acting instructor at Stanford University, becomes instructor at Northwestern University. Dr. Ruth T. Storey, formerly acting instructor in psychology on the Stanford University campus, becomes research associate in the departments of Neuropsychiatry in the Stanford Medical School, San Francisco. Dr. R. T. Ross, formerly instructor at Yale University, becomes instructor in charge of independent study in psychology at Stanford University.

Seventy-five scientific men and scholars, including fourteen Nobel laureates, will meet for the Harvard Tercentenary Conference of Arts and Sciences at Harvard, August 31 to September 12, 1936. The Conference will include a symposium on human behavior on September 7. This part of the program will present the conclusions of eight workers in the fields of physiology, history, biochemistry, philosophy, education, anthropology, and psychology. Professor Edgar E. Adrian, University of Cambridge, will open this symposium with a discussion of the nervous system on human behavior. *Psychological Factors* will be treated by Professor Carl G. Jung, Technische Hochschule, Zurich; *Hormones* by Professor James B. Collip, McGill University; *Logic* by Professor Rudolph Carnak, Deutsch University, Prague; *Culture* by Professor

Bronislaw Malinowski, University of London. At the same symposium Dr. A. Lawrence Lowell, President Emeritus of Harvard, will give An Example from the Evidence of History; Professor Pierre Janet, College of France, will tell of La force et la faiblesse psychologique; Professor Jean Piaget, University of Geneva, will discuss The Principal Factors Determining the Intellectual Evolution from Infancy to Adult Age.

—From *Science.*

Eighty-five universities and colleges in thirty-eight states, the District of Columbia, and Hawaii, are now participating in the Project in Research in Universities being sponsored by the Office of Education, Department of the Interior, with Emergency Relief Funds. Several hundred former college and graduate students, and college graduates taken from relief rolls are employed to do this work. Among the studies undertaken by the various colleges are "Student Mortality in Institutions of Higher Education," "The Economic Status of College Alumni," "Relation Between Certain Factors in High School Education and Success in College." Seven institutions will study "Economic Status of Rural Teachers." Dr. Bess Goodykoontz, Assistant United States Commissioner of Education, is giving general supervision to the University research project, assisted by many outstanding specialists in the various fields of education.

BOOK REVIEWS

DOOB, LEONARD W. *Propaganda, Its Psychology and Technique.* New York, Holt. 1935. Pp. x + 424.

The book is a dispassionate treatment of propaganda and takes the point of view that it is not to be condemned until its is understood. The author states various principles and illustrates them rather than presenting dramatic cases merely to startle the reader. An introductory section is devoted to psychological principles bearing on propaganda, such as attitudes, motivation, and suggestion.

An annotated survey of definitions of propaganda leads up to the author's own: "A systematic attempt by an interested individual to control the attitudes of groups of individuals through the use of suggestion and consequently, to control their actions." He points out that propaganda may be unintentional as well as intentional and decries the efforts of some writers to make it out a social monster. He criticizes them for discussing merely the efforts of the propagandist and omitting the psychological effect upon the reader. He also minimizes the frequent distinction between education and propaganda, and considers the former merely a special case of the latter dealing with the data or the approach of science. Five techniques are mentioned for decreasing the unpredictable elements in the population on which the propaganda is operating: people may be made more suggestible; attention may be directed specifically to the desired types of action, reinforcement may be given by repetition or by the use of related attitudes; conflicting attitudes may be avoided even through censorship; efforts may be made to get the individual early.

Another section deals with the "sweep" of propaganda and gives a straightforward analysis of many of the fields in which it is used. A well-chosen series of examples pretty much speak for themselves. The psychological mechanisms involved in advertising are mentioned. The Public Relations Counsellor comes in for extensive discussion. Four propaganda societies are described as typical of the four outstanding types,—one for the suppression of vice, another for promoting observance of Sunday, a third for promoting security for the aged (pre-Townsend), and a fourth for the advancement of colored people.

A final interesting chapter in this section deals with war propaganda showing how it detected the dominant attitudes of the public and then played up to them, successfully. The existence of a common enemy was conducive to the promotion of nationalism. The frequent tendency to blame it all on the munitions makers is examined in some detail and the point is made that practically all of their activities are similar in principle to those carried out by other types of business except that the

social consequences are more distressing. Turning to peace propaganda, the author commends the efforts of various institutes which promote international education and give the public insight into the undesirable aspects of war. He is not very hopeful, however, about the possibilities of establishing such attitudes on a wide enough scale so that they will be effective when the actual war-time comes and the usual propaganda are put into effect again.

The last section of the book deals with the vehicles of propaganda. The first of these is the newspaper which may foster a deliberate point of view or merely shift the emphasis given to particular details. Technically, the use of headlines, unusual type, pictures and cartoons facilitate propaganda. The radio receives perhaps less treatment than it deserves in comparison with newspapers. The author feels that we are moving in the direction of government control and is rather pessimistic as to the future of propaganda on the radio. Moving pictures afford some propaganda, most of which, however, is unintentional. The characters portrayed are usually wealthy, there is an over-emphasis of crime and sex, the news reels feature governmental activities, and an occasional educational film is designed largely in the interests of some special group. Experiments with children have indicated objectively measureable changes in attitudes as a result of viewing certain pictures. Other media are mentioned very briefly because they add to new principles. These include the stage, are work, pamphlets, poster boards, sky writing, magazine advertising. The public meeting has a possibility of introducing a claque to emphasize the right portions of the address. Mention is made of recent efforts by commercial organizations to spread rumors by word of mouth.

The final chapter of the book indicates the impossibility of eliminating all propaganda and it is only a question of which propaganda should exist. Before this question is answered it is necessary to know the social values toward which propaganda can be directed. The author has no real solution except to hint that experts in various fields including the social disciplines, would stand the greatest likelihood of working out the answer. Meanwhile, the rest of us should be more discriminating of the propaganda to which we are subjected,—a point on which the author and the reviewer likewise are not particularly sanguine.

The author is to be commended for taking a straightforward, unemotional approach to the problem. He comes to the conclusion that propaganda is inevitable, a thesis with which most psychologists will agree. The book will be of considerable interest to the social psychologists and they can translate its terminology into their own. It is cluttered with "principles" with rather formidable names, such as "principle of delayed revealed propaganda," "principle of the desired integration," "principle of the auxiliary submissive attitudes." These principles appear throughout the book bracketed and in italics when discussing a

situation to which the given principle applies. The author suggests, however, that it may be desirable to disregard these italics. The notion of integration seems a trifle overworked. Appropriate cognizance is taken of the recent work on attitudes.

The discussion at times moves a trifle slowly but on the whole is interesting. The author has a clever, somewhat humorous way of expressing himself and provides interesting illustrations. The book covers the field pretty well and while no very definite conclusion is reached, except the inevitability of propaganda, it is worthwhile to know how it operates and the various media which are employed. The reviewer commends it especially to those who lament that something ought to be done about propaganda without any insight into its psychological mechanisms.

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ALLPORT, G. W., AND ODBERT, H. S. *Trait-Names:* Psycho-lexical Study. Psychological Monographs, 1936, *47*, 1. Pp. viii, 171.

"Sooner or latter," state the authors of this new monograph, "every psychologist working in the field of personality collides with the problem of trait-names. Whatever method he employs . . . he is forced to ask himself whether the terms he is using in describing qualities and attributes of personality do actually denote psychic dispositions or traits, or whether these terms are mischievous verbal snares tempting him into the pitfalls of hypostatization and other perils of 'verbal magic'." Because we have to express our studies in language (finding it inconvenient to retreat, as the physicists did, into the realm of symbols), it is important that we consider the relation between psychological traits and their names, and attempt to choose the most happy name for any trait we may be studying.

The authors present five views as to the nature of traits themselves, which may be summarized as follows: (1) the traits or constituent units of personality may be only special patterns of sensation, perception and the other processes that make up the subject-matter of "general psychology." (2) The structure of personality is a special arrangement of dynamic patterns common to mankind in general (the psychoanalytic view of Id, Ego and Super-Ego); this view is essentially the same as the first, with a different bias. (3) "Personality consists of millions of specific habits." (4) The statisticisians believe that by factor analysis we can isolate mathematically "pure" traits, which the authors believe to be statistical artifacts. (5) "Wherever generalized determining tendencies can be identified in a single life, they may with propriety be called traits." In this sense traits are to be regarded as dispositions to act in a certain way (generalized mental sets), integrated out of specific habits of adjustment. Within traits as thus defined fall generalized attitudes, interests and values.

The last-mentioned view is of course the one adopted by the authors. I should take no exception to this, except as they state that "no two men possess precisely the same trait." This seems to get right back to the hair-splitting logic which they have previously rejected. When do two men have the same trait? Why, of course, when their generalized behavior tendencies are similar enough to merit the same name. Is a man the same man even after he has a hair-cut?

The value of the monograph lies in a careful search of Webster's New International Dictionary for four groups of words or phrases: (1) neutral (*i.e.*, non-evaluative) terms designating possible traits of personality; (2) terms primarily descriptive of temporary moods or activities; (3) weighted terms conveying social or characterial judgments of personal conduct, or designating influence on others; and (4) miscellaneous: designations of physique, capacities, and developmental conditions; metaphorical and doubtful terms. Typical of the four groups are: (1) abrupt, acquisitive, acute; (2) abashed, absorbed, accusing; (3) abnormal, absurd, accursed; (4) abortive, acerbic, acidulous.

The reliability of classification of terms into these different groups is checked by comparing the agreements of three judges with each other; these are much higher than chance expectation. There is a total of 17,953 terms, more or less equally distributed among the classifications.

The material will be useful for psychologists preparing check-lists of traits, etc. For anyone who wishes to repeat Thurstone's factor-analysis technique (see "The Vectors of Mind"), this list offers all the common and many unused trait-names which may be employed. Many problems suggest themselves as one merely reads across the four columns, or down any single column. The authors have sifted the entire lexicon and unearthed practically every English word or phrase which may have significance for the student of personality.

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M. E. BENNETT AND H. C. HAND. *Problems of Self-Discovery and Self-Direction.* New York and London: McGraw-Gill Book Company. 1935.

There is probably no more interesting topic than that of self. Every person likes to study himself and have others study him. This book of 171 pages is devoted to self study. It is divided into five units, with two to nine problems under each unit, and the problems are further divided into exercises. One or more exercises may be assigned for one preparation. The general nature or form of the exercise is first, a topic under the more general title of the problem; selected references pertinent to the topic; directions for carrying out the assignment; followed by statements (or names of traits or factors) to check and evaluate, or blank

spaces in which to write answers. The pages are perforated so that they may be torn out, or the book is bound sufficiently to last a semester as a text. The format is excellent.

A general impression may be gained from a sampling of the topics. Some of them deal with one's attitude toward, and the desirability of attending, college; selecting and cultivating friends, social usage and skills; learning, interests, attitudes, efficiency in studying, use of library, silent reading, and improvement of thinking; influences of environment and heredity upon (my) self, measurement of personality, some undesirable personality traits, and how to change personality; a philosophy of life, how it may be changed, and the contribution of college experiences to this philosophy, the place of marriage and home in one's life plan, choosing a vocation, and preparing for dynamic citizenship.

The book can be used as a supplementary text in mental hygiene, or educational psychology; and may perhaps make the instructor realize more clearly that every course in college is a course in mental hygiene. Another emphasis which may be derived from the book is upon ideals which are often permitted to develop in "Topsy" fashion. Counselors of students would find helpful suggestions in the study of individuals needing guidance. A fuller development of the topics may be found in the first author's book, "College and Life."

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AŽRIEL L. EISENBERG. *Children and radio programs.* New York, Columbia University Press. 1936. Pp. xvi + 240.

Radio broadcasting has become a major industry in the short space of fifteen years. Further, in this decade and a half it has affected the lives of as many or more people, and in a more intimate way, than the press, movies, church or any similar institution. The radio is catholic in its appeal, and children as well as adults "listen in" with avidity. Advertising sponsors have capitalized on this children's interest and have supported programs directed primarily to children. Also the youngsters share adult programs with their elders. It is not surprising that the influences, desirable and undesirable, of the radio on children have been the concern of parents, teachers and other interested in child welfare. But equally surprising is the apparent paucity of investigations. The author of this monograph in summarizing previous studies mentions less than ten researches designed to learn something about children and the radio.

Dr. Eisenberg has studied, by means of questionnaires and interviews, the radio habits of more than 3000 children in the New York metropolitan area. These children listened to an average of seven programs per week or an average of six and a quarter hours. Some differences were noted

in the listening habits between boys and girls and between different economic groups. Data are presented on the relation between listening habits and intelligence and personality ratings. The results are scarcely more than suggestive. Undesirable influences of radio listening are interference with normal play and with school work, development of fears, disturbing dreams, and exhibition of "nervousness." On the positive side it is shown that even commercial programs may make a contribution to the child's knowledge of school subjects; parents regard the radio "more as an ally than a hindrance in the training of children;" the children learn desirable hygienic habits, etc.

These are only a few of the findings of this survey. The report is replete with data on the children, on the programs listened to, and on the relations between them; on parents' attitudes toward children's listening habits; on the place of the radio in the home. From this welter of material even the author can draw few generalizations. However, every page is suggestive for future work. Researchers in child behavior, parents, and the broadcasting studios will all find careful study of this monograph a stimulating investment.

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NEW BOOKS AND PAMPHLETS

Books and pamphlets for review should be sent to James P. Porter, Editor, JOURNAL OF APPLIED PSYCHOLOGY, Ohio University, Athens, Ohio.

Answering Questions on Manchuria. South Manchurian Railway Company. The Herald Press, Hibiya Park, Tokyo, Japan. 84 pp.

Character and Citizenship Training in the Public School. VERNON JONES. University of Chicago Press, Chicago, 1936. $3.00. 400 pp.

Children and Radio Programs. AZRIEL L. EISENBERG. Columbia University Press, New York City, 1936. $3.00. 240 pp.

General Psychology. DAVID B. KLEIN. Henry Holt & Company, New York, 1936. $2.50. 560 pp.

Graduate Theses in Education—Abstracts. Vol. II. 1931–36. CARTER V. GOOD AND GORDON HENDRICKSON, Editors. Teachers College, University of Cincinnati, 1936. $2.00. 249 pp.

Metabolismé et Obesité. W. LIBERSON. Conservatoire National des Arts et Metiers, 292, Rue Saint Martin, Paris. 157 pp.

Der Musikalische Schaffensprozess. Psychologie der Schopferischen Erlenbnis-und Antriebsformen. DR. PHIL., DR. HABIL. JULIUS BAHLE. Verlag von S Hirzel, Liepzig, Germany, 1936. 253 pp.

Psychology of the Vibrato in Voice and Instrument. CARL E. SEASHORE. University of Iowa Studies. University of Iowa Press, Iowa City, Iowa, 1936. 159 pp.

Social Psychology. RICHARD T. LAPIERE AND PAUL R. FARNSWORTH. McGraw-Hill Book Company, New York, 1936. 528 pp. $4.50.

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Teachers' Marks and Objective Tests as Indices of School Adjustment. FRANCES S. SOBEL. Bureau of Publications, Teachers College, Columbia University, New York, 1936. 74 pp.

Twentieth Century Psychiatry. WILLIAM A. WHITE. W. W. Norton & Company, New York, 1936. 198 pp.

Vision et Professions. R. BONNARDEL. Conservatoire National des Arts et Metiers, 292 Rue Saint-Martin, Paris. 25 fr. 164 pp.

Directory of American Psychological Periodicals

(*Continued*)

Comparative Psychology Monographs — Baltimore: Johns Hopkins University Press. Subscription $5. 400 pages per volume. Knight Dunlap, Managing Editor. Published without fixed dates, each number a single research. Founded 1922.

Genetic Psychology Monographs—Worcester, Mass.: Clark University Press. Subscription $7.00 per volume. One volume per year. Edited by Carl Murchison. Bi-monthly. Each number one complete research. Child behavior, animal behavior and comparative psychology. Founded 1925.

Psychological Abstracts—Eno Hall, Princeton, N. J. American Psychological Association. Subscription $6.00. 700 pages ann. Edited by W. S. Hunter and R. R. Willoughby. Monthly. Abstracts of psychological literature. Founded 1927.

Pedagogical Seminary and Journal of Genetic Psychology—Worcester, Mass.: Clark University Press. Subscription $14.00 per annum; $7.00 per volume. 1,000 pages annually (2 volumes). Edited by Carl Murchison and an international cooperating board. Quarterly. Child behavior, animal behavior, and comparative psychology. Founded 1891.

Journal of Social Psychology—Worcester, Mass.: Clark University Press. Subscription $7.00. 500-600 pages annually. Edited by John Dewey and Carl Murchison. Quarterly. Political, racial, and differential psychology. Founded 1929.

Personnel Journal—Baltimore: The Williams & Wilkins Co. Subscription $5.00. 500 pages, approximately. Edited by Walter V. Bingham. Bi-Monthly.

Mental Measurement Monographs — Baltimore: The Williams & Wilkins Company. Subscription $5. 400 pages annually. Edited by Knight Dunlap and Buford Johnson. Published without fixed dates, each number a single research. Founded 1925.

Studies in Psychology and Psychiatry—Baltimore: The Williams & Wilkins Company. Subscription $5.00. 400 pages annually. Edited by Edward A. Pace. Published without fixed dates, each number a single research. Founded 1926.

Journal of Educational Psychology—Baltimore, Md.: Warwick & York. Subscription $6.00. Edited by Jack W. Dunlap, Harold E. Jones, and Percival M. Symonds. Published monthly except June to August. Founded 1910.

Child Development—Baltimore, Md.: Williams & Wilkins Company. Subscription $5.00. 400 pages annually. Edited by Buford Johnson. Quarterly. Founded 1930.

Character and Personality—Durham, N. C.: Duke University Press. Subscription $2.00 per annum. Quarterly. Edited by Robert Saudek (London) and Ernest Seeman (Durham, N. C.). Founded 1932.

The Psychological Exchange—11 East 125th Street, New York, N. Y. Subscription $3.00 per annum. Bi-monthly. Edited by James Hargan. Founded 1932.

Directory of American Psychological Periodicals

American Journal of Psychology—Ithaca, N. Y.: Cornell University. Subscription $6.50. 624 pages annually. Edited by K. M. Dallenbach, M. F. Washburn, M. Bentley, E. G. Boring. Quarterly. General and experimental psychology. Founded 1887.

Journal of General Psychology—Worcester, Mass.: Clark University Press. Subscription $14.00 per annum; $7.00 per volume. 1,000 pages annually (2 volumes). Edited by Carl Murchison and an international cooperating board. Quarterly. Experimental, theoretical, clinical, and historical psychology. Founded 1927.

Psychological Review—Princeton, N. J.: Psychological Review Company. Subscription $5.00. 540 pages annually. Bi-monthly. General Psychology. Edited by Herbert S. Langfeld. Founded 1894.

Psychological Monograph—Princeton, N. J.: Psychological Review Company. Subscription $6.00 per vol. 500 pp. Ed. by Joseph Peterson. Published without fixed dates, each issue one or more researches. Founded 1895.

Psychological Index—Princeton, N. J.: Psychological Review Company. Subscription $4.00. 300–400 pp. Edited by W. S. Hunter and R. R. Willoughby. An annual bibliography of psychological literature. Founded 1896.

Psychological Bulletin—Princeton, N. J.: Psychological Review Company. Subscription $6.00. 720 pages annually. Psychological literature. Monthly (10 numbers). Edited by John A. McGeoch. Founded 1904.

Archives of Psychology—New York: Columbia University. Subscription $3.00. 500 pp. ann. Ed. by R. S. Woodworth. Published without fixed dates, each number a single experimental study. Founded 1906.

Journal of Abnormal and Social Psychology—Eno Hall, Princeton, N. J. American Psychological Association. Subscription $5.00. Foreign, $5.25. Editor, Harry T. Moore. Quarterly. 448 pages annually. Abnormal and Social. Founded 1906.

Psychological Clinic—Philadelphia: Psychological Clinic Press. Subscription $3.00. 288 pages. Ed. by Lightner Witmer. Without fixed dates (Quarterly). Orthogenics, psychology, hygiene. Founded 1907.

Psychoanalytic Review—Washington, D. C.: 3617 19th St., N.W. Subscription $6.00. 500 pages annually. Psychoanalysis. Quarterly. Ed. by W. A. White and S. E. Jelliffe. Founded. 1913.

Journal of Experimental Psychology—Princeton, N. J. Psychological Review Company. 900 pages annually. Experimental. Subscription $7.00. Bi-monthly. Edited by S. W. Fernberger. Founded 1916.

Journal of Applied Psychology—Lancaster, Pa.: Science Press Printing Co. Subscription $6.00. 600 pages annually. Bi-monthly. Edited by James P. Porter, Ohio University, Athens, Ohio. Founded 1917.

Journal of Comparative Psychology—Baltimore: The Williams & Wilkins Co. Subscription $5.00 per volume of 480 pages. Two volumes every year. Edited by Knight Dunlap and Robert M. Yerkes. Founded 1921.

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